CLAIMS

Cancel claims 1 through 57, and substitute new claims 58 through 121.

SECTION I

NEW CLAIMS

58. (New Claim) A vacuum filtration apparatus comprising:

a base containing a funnel well with a filter seal surface integral to said base, disposed adjacent to the bottom of the inside wall of said funnel well, with a filter support means integral to said base, disposed in the bottom of said funnel well inside of said filter seal surface, with an outlet port integral to said base disposed below said filter support means, said outlet port being in direct fluid flow communication with said filter support means,

a funnel with an open top, said funnel containing an integral flexible filter seal, with at least a portion of said integral flexible filter seal disposed below the bottom surface of the outside wall of the funnel, said integral flexible filter seal being compressible in the vertical direction,

a filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as the integral filter seal surface of said base,

with the bottom portion of said funnel releasably attached to said base, with the integral flexible filter seal of the funnel inserted into the funnel well of the base a sufficient distance to compress the integral flexible filter seal of the funnel in the vertical direction, thereby releasably sealing the

outer periphery of the filter means with a leak tight seal between the integral filter seal surface of the base and the bottom surface of the compressed integral flexible filter seal of the funnel, said releasable seal allowing the filter means to be removed from the apparatus after first removing the funnel,

whereby the integral flexible filter seal of the funnel can be compressed a sufficient distance in the vertical direction to releasably seal filter means of varying thickness', with a leak tight seal between said integral filter seal surface of said base and the bottom surface of said integral flexible seal of said funnel.

59. (New Claim) The vacuum filtration apparatus of claim 58 wherein the inside wall of the funnel well of the base contains a taper, with the diameter at the top of the inside wall being greater than the diameter at the bottom of the inside wall,

with the bottom outside wall of the funnel containing a taper that substantially matches the taper of the inside wall of the funnel well of the base,

with the bottom portion of the funnel press fitted into the funnel well of the base so that the taper of the funnel engages the taper of the base, with a sufficient force to prevent accidental disengagement, while still allowing the funnel to be easily removed from the base,

and wherein the integral flexible filter seal of the funnel can be compressed a sufficient distance in the vertical direction to releasably seal filter means of varying thickness' between said integral filter seal surface of said base and said integral flexible seal of said funnel, to create a leak tight seal, for all values of the outside diameter of the bottom portion of funnel within its normal manufacturing tolerance range, and for all values of the inside diameter of the inside wall of the funnel well of the

base within its normal manufacturing tolerance range,

thereby causing the funnel to fit into the base plus and minus around the nominal distance from the top of the funnel to the integral filter seal surface of the base,

thereby causing the integral flexible filter seal of the funnel to be compressed plus or minus around its nominal height of compression, thereby creating the leak tight seal.

60. (New Claim) The vacuum filtration apparatus of claim 58 wherein the top surface of the integral filter support means of the base is disposed within, and below, the integral filter seal surface of the base, thereby creating a pad well below the integral filter seal surface of the base, and wherein an absorbent pad is disposed in said pad well, with the downstream surface of said absorbent pad resting directly on the top surface of the integral filter support means, with a portion of the downstream surface of the filter means resting on the upstream surface of said absorbent pad.

61. (New Claim) The vacuum filtration apparatus of claim 60 wherein said filter means is hydrophilic, and wherein said absorbent pad is hydrophilic, and wherein the filter means has a sufficiently small pore size to remove bacteria from the liquid being filtered, and to trap the bacteria on the upstream surface of the filter means.

62. (New Claim) The vacuum filtration apparatus of claim 61 wherein the thickness of said hydrophilic absorbent pad is sufficiently greater than the height of said pad well, and wherein the thickness of the hydrophilic absorbent pad is sufficiently greater than the thickness of the hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both

the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered.

63. (New Claim) The vacuum filtration apparatus of claim 58 wherein a portion of the filter means that is in contact with said integral filter seal surface of said base, is further sealed to said integral filter seal surface with a non-releasable seal, said non-releasable seal forming a closed loop.

64. (New Claim) The vacuum filtration apparatus of claim 58 wherein the top portion of said funnel is substantially cylindrical in shape,

with said funnel containing one or more lid clamp tabs protruding from the upper substantially cylindrical portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs,

with said vacuum filtration apparatus further containing a lid, having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially

cylindrical inner surface of the outer wall, with the slots dividing the outer wall into a plurality of segments, thereby allowing the outer wall to flex,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material, so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the

funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

65. (New Claim) The vacuum filtration apparatus of claim 64 wherein said base contains one or more lid clamp tabs protruding from the outside wall of said base, with the one or more lid clamp tabs of the base containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs of the base to the bottom portion of the one or more lid clamp tabs of the base, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the top of the sloped surface of the one or more lid clamp tabs of the base, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the bottom of the sloped surface of the one or more lid clamp tabs of the base,

with the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the minimum diameter of the sloped surface of the one or more lid clamp tabs of the funnel, and with the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the

maximum diameter of the sloped surface of the one or more lid clamp tabs of the funnel,

so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the base without the need to rotate the lid with respect to the base so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs of the base, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs of the base until the lid is fully seated onto the base with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs of the base, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the base to expand outward and to remain expanded outward for as long as the lid is pressed onto the base, thereby releasably attaching the lid to the base with an interference fit between the bottom portion of the one or more lid clamp tabs of the base and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs of the base, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the base, while also allowing the lid to be easily removed from the base with one hand by lifting the lid from the base without the need to rotate the lid with respect to the base, thereby causing the outer wall of the lid to return to its un-expanded state.

66. (New Claim) The vacuum filtration apparatus of claim 64 wherein a means is provided to vent the interior of the funnel when the lid is pressed onto the funnel.

67. (New Claim) The vacuum filtration apparatus of claim 65 wherein a means is provided to vent the interior of the base when the lid is pressed onto the base.

68. (New Claim) The vacuum filtration apparatus of claim 58 wherein the integral flexible filter seal of the funnel is made from a different material than the other parts of the funnel.

69. (New Claim) A vacuum filtration apparatus comprising:

a base containing a funnel well with a filter seal surface integral to said base, disposed adjacent to the bottom of the inside wall of said funnel well, said inside wall being substantially cylindrical in shape, with a filter support means integral to said base, disposed in the bottom of said funnel well inside of said filter seal surface, with an outlet port disposed below said filter support means, said outlet port being in fluid flow communication with said filter support means,

a filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said integral filter seal surface,

a funnel with an open top, with one or more integral flexible funnel seal rings protruding from the bottom portion of the outside wall of said funnel above the bottom surface of said funnel,

with the outside diameter of the one or more integral flexible funnel seal rings being sufficiently greater than the inside diameter of the substantially cylindrical inside wall of the funnel well of the base, and with the height of the substantially cylindrical inside wall of the funnel well of the base being sufficiently high, so that the entire bottom portion of

the funnel containing the one or more integral flexible funnel seal rings can be pressed into the funnel well of the base until the outer periphery of the filter means is compressed between the bottom surface of the funnel and the integral filter seal surface of the base, with the one or more integral flexible funnel seal rings of the funnel being forced to deflect upward as the are inserted into the funnel well of the base, with the one or more integral flexible funnel seal rings remaining deflected upward for as long as the bottom portion of the funnel containing the one or more integral flexible funnel seal rings is inserted into the base, thereby releasably attaching the funnel to the base with an interference fit between end wall of the upwardly deflected one or more integral flexible funnel seal rings of the funnel and the substantially cylindrical inside wall of the funnel well of the base, with the releasable attachment between the funnel and the base being sufficiently strong to prevent the funnel from being accidentally disengaged from the base, while allowing the funnel to be easily removed from the base by the user,

thereby releasably sealing the filter means to the filtration apparatus with a leak tight seal between the bottom surface of the funnel and the integral filter seal surface of the base for all values of thickness of the filter means greater than zero,

said releasable filter seal allowing the filter means to be removed from the apparatus after first removing the funnel.

70. (New Claim) The vacuum filtration apparatus of claim 69 wherein the outside diameter of the one or more integral flexible funnel seal rings of the funnel are sufficiently greater than the inside diameter of the substantially cylindrical inside wall of the funnel well of

the base, so that the funnel can be releasably attached to the base for all values of the outside diameter of the one or more integral flexible funnel seal rings of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the inside diameter of the substantially cylindrical inside wall of the funnel well of the base within a normal manufacturing tolerance range around its nominal value.

71. (New Claim) The vacuum filtration apparatus of claim 69 wherein the top surface of the integral filter support means of the base is disposed within, and below, the integral filter seal surface of the base, thereby creating a pad well below the integral filter seal surface of the base, and wherein an absorbent pad is disposed in said pad well, with the downstream surface of said absorbent pad resting directly on the top surface of the integral filter support means, with a portion of the downstream surface of the filter means resting on the upstream surface of said absorbent pad.

72. (New Claim) The vacuum filtration apparatus of claim 71 wherein said filter means is hydrophilic, and wherein said absorbent pad is hydrophilic, and wherein the filter means has a sufficiently small pore size to remove bacteria from the liquid being filtered, and to trap the bacteria on the upstream surface of the filter means.

73. (New Claim) The vacuum filtration apparatus of claim 72 wherein the thickness of said hydrophilic absorbent pad is sufficiently greater than the height of said pad well, and wherein the thickness of the hydrophilic absorbent pad is sufficiently greater than the thickness of the hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to

keep the hydrophilic filter means wrinkle free after both the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered.

74. (New Claim) The vacuum filtration apparatus of claim 69 wherein a portion of the filter means that is in contact with said integral filter seal surface of said base, is further sealed to said integral filter seal surface with a non-releasable seal, said non-releasable seal forming a closed loop.

75. (New Claim) The vacuum filtration apparatus of claim 69 wherein the top portion of said funnel is substantially cylindrical in shape,

with said funnel containing one or more lid clamp tabs protruding from the upper substantially cylindrical portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs,

with said vacuum filtration apparatus further containing a lid, having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots

being less than or equal to the height of the substantially cylindrical inner surface of the outer wall, with the slots dividing the outer wall into a plurality of segments, thereby allowing the outer wall to flex,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material, so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of

the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

76. (New Claim) The vacuum filtration apparatus of claim 75 wherein said base contains one or more lid clamp tabs protruding from the outside wall of said base, with the one or more lid clamp tabs of the base containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs of the base to the bottom portion of the one or more lid clamp tabs of the base, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the top of the sloped surface of the one or more lid clamp tabs of the base, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the bottom of the sloped surface of the one or more lid clamp tabs of the base,

with the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the minimum diameter of the sloped surface of the one or more lid clamp tabs of the funnel, and with the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the

maximum diameter of the sloped surface of the one or more lid clamp tabs of the funnel,

so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the base without the need to rotate the lid with respect to the base so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs of the base, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs of the base until the lid is fully seated onto the base with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs of the base, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the base to expand outward and to remain expanded outward for as long as the lid is pressed onto the base, thereby releasably attaching the lid to the base with an interference fit between the bottom portion of the one or more lid clamp tabs of the base and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs of the base, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the base, while also allowing the lid to be easily removed from the base with one hand by lifting the lid from the base without the need to rotate the lid with respect to the base, thereby causing the outer wall of the lid to return to its un-expanded state.

77. (New Claim) The vacuum filtration apparatus of claim 75 wherein a means is provided to vent the interior of the funnel when the lid is pressed onto the funnel.

78. (New Claim) The vacuum filtration apparatus of claim 76 wherein a means is provided to vent the interior of the base when the lid is pressed onto the base.

79. (New Claim) The vacuum filtration apparatus of claim 69 wherein the one or more integral flexible funnel seal rings of the funnel are made from a different material than the other parts of the funnel.

80. (New Claim) A vacuum filtration apparatus comprising:

a base containing a funnel well with a filter seal surface disposed adjacent to the bottom of the inside wall of said funnel well, with an absorbent pad support means disposed in the bottom of said funnel well inside of said filter seal surface, entirely below said filter seal surface, thereby creating a pad well below said filter seal surface, with an outlet port disposed below said absorbent pad support means, said outlet port being in fluid flow communication with said absorbent pad support means,

a funnel with an open top and an open bottom,

a hydrophilic filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said filter seal surface, with the outer periphery of the filter means sealed to the filtration apparatus to prevent bypass of un-filtered liquid around the filter means,

with the bottom portion of said funnel releasably attached to said base thereby creating a reservoir for un-filtered liquid above said filter means,

with a hydrophilic absorbent pad disposed in said pad well, with the downstream surface of said hydrophilic absorbent pad resting directly on the top surface of said absorbent pad support means, with at

least a portion of the downstream surface of said filter means inside of the filter seal surface resting on the upstream surface of said absorbent pad,

with the thickness of said hydrophilic absorbent pad being sufficiently greater than the height of said pad well, and with the thickness of the hydrophilic absorbent pad being sufficiently greater than the thickness of the hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered.

81. (New Claim) The vacuum filtration apparatus of claim 80 wherein the filter means is sealed to the filter seal surface of the base with a non-releasable seal, said non-releasable seal forming a closed loop.

82. (New Claim) The vacuum filtration apparatus of claim 81 wherein the non-releasable seal is a heat seal.

83. (New Claim) The vacuum filtration apparatus of claim 81 wherein the non-releasable seal is an ultrasonic seal.

84. (New Claim) The vacuum filtration apparatus of claim 81 wherein the non-releasable seal is a solvent seal.

85. (New Claim) The vacuum filtration apparatus of claim 80 wherein the filter means is releasably sealed with a compression seal between the bottom surface of the funnel and said filter seal surface.

86. (New Claim) The vacuum filtration apparatus of claim 80 wherein the top portion of said funnel is substantially cylindrical in shape,

with said funnel containing one or more lid clamp tabs protruding from the upper substantially cylindrical portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs,

with said vacuum filtration apparatus further containing a lid, having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface of the outer wall, with the slots dividing the outer wall into a plurality of segments, thereby allowing the outer wall to flex,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the

funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material, so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with

one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

87. (New Claim) The vacuum filtration apparatus of claim 86 wherein said base contains one or more lid clamp tabs protruding from the outside wall of said base, with the one or more lid clamp tabs of the base containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs of the base to the bottom portion of the one or more lid clamp tabs of the base, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the top of the sloped surface of the one or more lid clamp tabs of the base, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the bottom of the sloped surface of the one or more lid clamp tabs of the base,

with the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the minimum diameter of the sloped surface of the one or more lid clamp tabs of the funnel, and with the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the maximum diameter of the sloped surface of the one or more lid clamp tabs of the funnel,

so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the base without the need to rotate the lid with respect to the base so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs of the base, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs of the base until the lid is fully seated

onto the base with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs of the base, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the base to expand outward and to remain expanded outward for as long as the lid is pressed onto the base, thereby releasably attaching the lid to the base with an interference fit between the bottom portion of the one or more lid clamp tabs of the base and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs of the base, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the base, while also allowing the lid to be easily removed from the base with one hand by lifting the lid from the base without the need to rotate the lid with respect to the base, thereby causing the outer wall of the lid to return to its un-expanded state.

88. (New Claim) The vacuum filtration apparatus of claim 86 wherein a means is provided to vent the interior of the funnel when the lid is pressed onto the funnel.

89. (New Claim) The vacuum filtration apparatus of claim 87 wherein a means is provided to vent the interior of the base when the lid is pressed onto the base.

90. (New Claim) The vacuum filtration apparatus of claim 88 wherein the means to vent the interior of the funnel when the lid is positioned on the funnel is one or more vent slots in the top of the funnel.

91. (New Claim) The vacuum filtration apparatus of claim 89 wherein the means to vent the interior of the base when the lid is positioned on the base is one or more vent

slots in the top of the inside wall of the funnel well of the base.

92. (New Claim) The vacuum filtration apparatus of claim 80 wherein the hydrophilic filter means has a sufficiently small pore size to remove bacteria from the liquid being filtered, and to trap the bacteria on the upstream surface of the filter means.

93. (New Claim) The vacuum filtration apparatus of claim 92 wherein a quantity of aqueous growth media is added to the hydrophilic absorbent pad after the filtration cycle is complete, the growth media being used to feed the trapped bacteria on the upstream surface of the hydrophilic filter means during a subsequent incubation cycle, thereby allowing the bacteria to multiply and create visible colonies on the upstream surface of the hydrophilic filter means, thereby making the vacuum filtration apparatus capable of detecting bacteria in liquid sample.

94. (New Claim) The vacuum filtration apparatus of claim 80 wherein the outlet port of the base is directly connectable to a vacuum source.

95. (New Claim) A vacuum filtration apparatus comprising:

a base containing a funnel well with a filter seal surface integral to said base, disposed adjacent to the bottom of the inside wall of said funnel well, with a filter support means integral to said base, disposed in the bottom of said funnel well inside of said filter seal surface, with an outlet port integral to said base disposed below said filter support means, said outlet port being in fluid flow communication with said filter support means,

a filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said integral filter seal surface, with the outer periphery of the filter means sealed to said filter seal surface to prevent bypass around the filter means,

a funnel with an open top, with the top portion of the outside wall of the funnel being substantially cylindrical in shape, with the bottom portion of said funnel releasably attached to said base,

with said funnel containing one or more lid clamp tabs protruding from the upper substantially cylindrical portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs,

a lid, having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface of the outer wall, with the slots dividing the outer

wall into a plurality of segments, thereby allowing the outer wall to flex,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material, so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of

the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state,

a means to vent the interior of the funnel when the lid is pressed onto the top of the funnel.

96. The vacuum filtration apparatus of claim 95 wherein the filter means is sealed to the filter seal surface of the base with a non-releasable seal, said non-releasable seal forming a closed loop.

97. The vacuum filtration apparatus of claim 96 wherein the non-releasable seal is a heat seal.

98. The vacuum filtration apparatus of claim 96 wherein the non-releasable seal is an ultrasonic seal.

99. The vacuum filtration apparatus of claim 96 wherein the non-releasable seal is a solvent seal.

100. The vacuum filtration apparatus of claim 95 wherein the filter means is releasably sealed to the base by

compressing the outer periphery of the filter means between the bottom edge of the funnel and the filter seal surface of the base.

101. (New Claim) The vacuum filtration apparatus of claim 95 wherein said base contains one or more lid clamp tabs protruding from the outside wall of said base, with the one or more lid clamp tabs of the base containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs of the base to the bottom portion of the one or more lid clamp tabs of the base, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the top of the sloped surface of the one or more lid clamp tabs of the base, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base occurs at the bottom of the sloped surface of the one or more lid clamp tabs of the base,

with the minimum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the minimum diameter of the sloped surface of the one or more lid clamp tabs of the funnel, and with the maximum diameter of the sloped surface of the one or more lid clamp tabs of the base being substantially equal to the maximum diameter of the sloped surface of the one or more lid clamp tabs of the funnel,

so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the base without the need to rotate the lid with respect to the base so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs of the base, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs of the base until the lid is fully seated onto the base with the bottom inside edge of the lid

disposed below the bottom of the sloped surface of the one or more lid clamp tabs of the base, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the base to expand outward and to remain expanded outward for as long as the lid is pressed onto the base, thereby releasably attaching the lid to the base with an interference fit between the bottom portion of the one or more lid clamp tabs of the base and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs of the base, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the base, while also allowing the lid to be easily removed from the base with one hand by lifting the lid from the base without the need to rotate the lid with respect to the base, thereby causing the outer wall of the lid to return to its un-expanded state.

102. (New Claim) The vacuum filtration apparatus of claim 101 wherein a means is provided to vent the interior of the base when the lid is pressed onto the base.

103. (New Claim) The vacuum filtration apparatus of claim 95 wherein the top surface of the integral filter support means of the base is disposed within, and below, the integral filter seal surface of the base, thereby creating a pad well below the integral filter seal surface of the base, and wherein an absorbent pad is disposed in said pad well, with the downstream surface of said absorbent pad resting directly on the top surface of the integral filter support means, with a portion of the downstream surface of the filter means resting on the upstream surface of said absorbent pad.

104. (New Claim) The vacuum filtration apparatus of claim 103 wherein said filter means is hydrophilic, and wherein said absorbent pad is hydrophilic, and wherein the filter means has a sufficiently small pore size to remove bacteria from the liquid being filtered, and to trap the bacteria on the upstream surface of the filter means.

105. (New Claim) The vacuum filtration apparatus of claim 104 wherein the thickness of said hydrophilic absorbent pad is sufficiently greater than the height of said pad well, and wherein the thickness of the hydrophilic absorbent pad is sufficiently greater than the thickness of the hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered.

106. (New Claim) A vacuum filtration apparatus comprising:

a base containing a funnel well with a first filter seal surface disposed adjacent to the bottom of the inside wall of said funnel well, with a filter support means disposed in the bottom of said funnel well, inside of, and below, said first filter seal surface, thereby creating a pad well inside of, and below, said first filter seal surface, with said filter support means containing a second filter seal surface at its outer periphery, with an outlet port disposed below said filter support means, said outlet port being in fluid flow communication with said filter support means,

a funnel with an open top, with the bottom portion of said funnel releasably attached to said base,

a second filter means disposed in said pad well with the entire downstream surface of the second filter means in contact with said filter support means, and with the downstream portion of the outer periphery of said second filter means in contact with said second filter seal surface,

an absorbent pad disposed in said pad well, with the outer boundary of the absorbent pad disposed entirely within the boundary of the pad well, with the downstream surface of said absorbent pad resting on the upstream surface of said second filter means,

a first filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said first filter means lying in the same plane as the plane of said first filter seal surface of said base, with the outer periphery of said first filter means sealed to said base to prevent bypass around said first filter means, with at least a portion of the downstream surface of the first filter means that lies within the boundary of the pad well resting on the upstream surface of the absorbent pad.

107. (New Claim) The vacuum filtration apparatus of claim 106 wherein the first filter means, and the second filter means, and the absorbent pad are hydrophilic,

and wherein the pore size of the second filter means is less than the pore size of the first filter means,

and wherein the pore size of the absorbent pad is less than the pore size of the first and second filter means.

108. (New Claim) The vacuum filtration apparatus of claim 107 wherein the pore size of the second filter means is sufficiently small to prevent the liquid in the pores of the second filter means from being sucked out of the pores of the second filter means by a vacuum source applied to the outlet port,

after the first filter means, the absorbent pad and the second filter means have been wetted by the liquid being filtered,

and after all of the liquid in the funnel has been sucked out of the funnel by the vacuum applied to the outlet port.

109. (New Claim) The vacuum filtration apparatus of claim 106 wherein the first filter seal surface is an integral part of the base,

and wherein the filter support means is an integral part of the base,

and wherein the outlet is an integral part of the base.

110. (New Claim) The vacuum filtration apparatus of claim 109 wherein the releasable attachment between said funnel and said base is an interference fit between the outer wall of said funnel, and the inside wall of said funnel well of said base.

111. (New Claim) The vacuum filtration apparatus of claim 108 wherein the thickness of said hydrophilic absorbent pad is sufficiently greater than the height of said pad well, and wherein the thickness of the hydrophilic absorbent pad is sufficiently greater than the thickness of the first hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the first hydrophilic filter means wrinkle free after both the first hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered.

112. (New Claim) A vacuum filtration apparatus comprising:

a base containing a funnel well with a filter seal surface disposed adjacent to the bottom of the inside

wall of said funnel well, with a filter support means disposed in the bottom of said funnel well inside of said filter seal surface, with an outlet port disposed below said filter support means, said outlet port being in fluid flow communication with said filter support means,

a filter means disposed in the bottom portion of said funnel well with the downstream surface of said filter means lying in the same plane as the plane of said filter seal surface,

a filter seal ring comprising an annular ring containing a substantially horizontal top surface, and a substantially horizontal bottom surface, with an inner end surface extending from the inner edge of the top surface to the inner edge of the bottom surface, and with an outer end surface extending from the outer edge of the top surface to the outer edge of the bottom surface, with the maximum diameter of the outer end surface of the filter seal ring being greater than the inside diameter of the funnel well, the filter seal ring being made from a non-elastomeric material,

with the filter seal ring press fitted into the funnel well, until the outer periphery of the filter means is compression sealed with a leak tight seal between at least a portion of the bottom surface of the filter seal ring and the filter seal surface of the base, with an interference fit formed between at least a portion of the outer end surface of the seal ring and the inside wall of the funnel well,

a funnel with an open top, and an open bottom, with the bottom portion of said funnel releasably attached to the said base, thereby creating a reservoir for un-filtered liquid above the filter means, with the funnel being attached to the base after the filter seal ring has been pressed into the funnel well of the base.

113. (New Claim) The vacuum filtration apparatus of claim 112 wherein the outer periphery of the substantially horizontal top surface of the filter seal ring slopes upward so that the outer edge of the top surface is disposed above the inner edge of the top surface,

and wherein the outer periphery of the substantially horizontal bottom surface of the filter seal ring slopes upward so that the outer edge of the bottom surface is disposed above the inner edge of the bottom surface.

114. (New Claim) The vacuum filtration apparatus of claim 112 wherein the top surface of the filter support means of the base is disposed within, and below, the filter seal surface of the base, thereby creating a pad well below the filter seal surface of the base, and wherein an absorbent pad is disposed in said pad well, with the downstream surface of said absorbent pad resting directly on the top surface of the filter support means, with a portion of the downstream surface of the filter means resting on the upstream surface of said absorbent pad.

115. (New Claim) A vacuum filtration apparatus comprising:

a base containing an outlet port capable of being adapted to a vacuum source, said base further containing a filter seal surface disposed above said outlet port,

a filter means disposed upstream of the outlet port, with the outer periphery of the downstream surface of the filter means in contact with the filter seal surface of the base,

a filter support means disposed between the filter means and the outlet port, with at least a portion of the downstream side of the filter means disposed inside of said filter seal surface supported by said filter support means,

a funnel with an open top, said funnel containing an integral flexible filter seal, with at least a portion of said integral flexible filter seal disposed below the bottom surface of the outside wall of the funnel, said integral flexible filter seal being compressible in the vertical direction,

with said funnel attached to said base so that the bottom surface of said integral flexible filter seal of the funnel is in contact with the upstream surface of the outer periphery of the filter means, and so that the integral flexible seal of the funnel is compressed in the vertical direction thereby sealing the outer periphery of the filter means with a leak-tight compression seal between the bottom surface of the compressed integral filter seal of the funnel and the filter seal surface of the base, said funnel forming a reservoir capable of holding un-filtered liquid upstream of said filter means,

whereby the integral flexible filter seal of the funnel can be compressed a sufficient distance in the vertical direction to seal filter means of varying thickness', with a leak tight seal between the filter seal surface of the base and the bottom surface of the integral flexible seal of the funnel.

116. (New Claim) The vacuum filtration apparatus of claim 115 wherein the flexible filter seal of the funnel is made from a different material than the other parts of the funnel.

117. (New Claim) The vacuum filtration apparatus of claim 115 wherein the attachment between the funnel and the base is a releasable attachment, thereby allowing the filter means to be removed from the apparatus, after first removing the funnel from the base.

118. (New Claim) The vacuum filtration apparatus of claim 115 wherein the base further contains a pad well, with the side wall of the pad well disposed entirely inside of the filter seal surface of the base, and with the bottom wall of the pad well disposed entirely below the filter seal surface of the base, with an absorbent pad disposed in said pad well, with the entire downstream surface of the absorbent pad resting on the bottom surface of the pad well, thereby making the bottom surface of the pad well a pad support means, with at least a portion of the downstream surface of the filter means disposed inside of the filter seal surface of the base resting on the upstream surface of the absorbent pad, thereby making the upstream surface of the absorbent pad the filter support means.

119. (New Claim) A vacuum filtration apparatus comprising:

a base containing an outlet port capable of being adapted to a vacuum source,

a funnel with an open top attached to the base,

a filter support means disposed upstream of the outlet port,

a filter means disposed upstream of the filter support means, said filter means being sealed to the vacuum filtration apparatus, thereby preventing un-filtered liquid from bypassing the filter means, thereby preventing the flow of un-filtered liquid through the outlet port,

with the interior of the funnel capable of holding un-filtered liquid upstream of said filter means,

with said funnel containing one or more lid clamp tabs protruding from the upper portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at

the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs,

with said vacuum filtration apparatus further containing a lid having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface of the outer wall, with the slots dividing the outer wall into a plurality of segments, thereby allowing the outer wall to flex,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material, so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

120. (New Claim) A vacuum filtration apparatus comprising:

a base containing an outlet port capable of being adapted to a vacuum source, a filter seal surface disposed above said outlet port, and a pad well,

said pad well containing a substantially vertical side wall and a bottom wall, with the boundary of the top of the side wall of the pad well being coincident with the inner boundary of the filter seal surface, with the bottom surface of the pad well being substantially parallel to the filter seal surface, and disposed entirely below the filter seal surface,

a hydrophilic absorbent pad disposed in said pad well, with the downstream surface of said hydrophilic absorbent pad resting directly on the bottom surface of the pad well,

a hydrophilic filter means, with the downstream surface of the outer periphery of the hydrophilic filter means in direct contact with the filter seal surface of the base, with the outer periphery of the hydrophilic filter means sealed to the vacuum filtration apparatus to prevent the flow of un-filtered liquid between the filter seal surface of the base and the downstream surface of the outer periphery of the hydrophilic filter means, with at least a portion of the downstream surface of the hydrophilic filter means disposed inside of the filter seal surface of the base resting on the top surface of the hydrophilic absorbent pad,

a funnel with an open top attached to the base, said funnel forming a reservoir capable of holding un-filtered liquid upstream of the hydrophilic filter means,

whereby un-filtered liquid from the funnel, is drawn first through the hydrophilic filter means, and then through the hydrophilic absorbent pad, and then into the outlet port, by applying a vacuum source to the outlet port,

with the thickness of said hydrophilic absorbent pad being sufficiently greater than the height of said pad well, and with the thickness of the hydrophilic absorbent pad being sufficiently greater than the thickness of the hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both

the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered.

121. (New Claim) The vacuum filtration apparatus of claim 120 wherein the bottom wall of the pad well further contains a pad underdrain, said pad underdrain directing the flow of filtered liquid from the absorbent pad to the outlet port, thereby reducing the pressure drop across the hydrophilic absorbent pad.

SECTION II

Changes To The Specification

Reference number 43 is first used on page 22 line 34 as ``inner surface 43'', later it is used in the term ``sloped surface 43''. Therefore, the term ``inner surface 43'' will be changed to ``inner surface 89'' in the following locations:

Change the paragraph starting on page 22, line 30 as follows:

Details of funnel 30 are shown in Figure 8, Figure 9, and Figure 10. The bottom of funnel 30 contains an integral flexible filter seal 38, disposed around the bottom of funnel 30, bound by inner surface **[43]** **89**, outer surface 58, and bottom surface 44. Inner surface **[43]** **89** is preferably formed by revolving a round section around the central axis of funnel 30, with the top of said round attached to the bottom inside edge of inner wall 40 of funnel 30 as depicted in Figure 9. Bottom surface 44 is preferably flat and contains round 45 at its outside edge as depicted in Figure 9. Outer surface 58 is a C-shaped surface as depicted in Figure 9. Although integral flexible filter seal 38 as shown in Figure 9 is C-shaped with the open part of the C pointing outward, any shape that allows the seal to compensate for varying filter thickness by flexing could be used, such as a C-shaped integral flexible filter seal with the open part of the C pointing inward, or the types of integral flexible filter seals shown in Figure 29 as integral flexible filter seal 838, and in Figure 30 as integral flexible filter seal 938 or as integral flexible filter seal 1038. All of the integral flexible filter seals shown in the Figure 9, Figure 13a, Figure 13b, Figure 16, Figure 17a, Figure 20, Figure 21, Figure 23, Figure 28, Figure 29, and Figure 30 protrude from the bottom surface of the funnel. The bottom surface of the funnel is shown in Figure 29 as bottom surface 899 of funnel 830, and it is shown in Figure 30 as bottom surface

999 of funnel 930, and as bottom surface 1099 of funnel 1030. The integral flexible filter seal could however, protrude from the inner wall of the funnel, or from the outer wall of the funnel. The important feature of the integral flexible filter seal is that can flex to maintain a leak tight seal between a portion of the integral flexible filter seal and the filter seal surface of the base, for varying thickness' of the filter means, and/or for dimension variations of either the funnel or the base, or both. Although integral flexible filter seal 38 shown in Figure 9 is composed of the same material as the rest of the funnel, the funnel could be molded of a first material such as polystyrene in a first molding cycle, and then the integral flexible filter seal 38 could be molded from a second much softer material such as polyethylene or rubber in a second molding cycle. The section of funnel 30 directly above integral flexible filter seal 38 is bound by inner wall 40, and outer wall 59. Inner wall 40 is preferably conical in shape with a draft angle of approximately 1/2°, to assist in removal from the mold from which it is molded. Outer wall 59 may have the same draft angle as inner wall 40, or it may be vertical. Protruding from outer wall 59 is one or more integral flexible funnel seal ring 37. Each integral flexible funnel seal ring is bounded by side walls 46, and end wall 47. Side walls 46 are preferably tapered to improve mold-ability, and end wall 47 is preferably round in shape as depicted in Figure 9. Although one or more integral flexible funnel seal rings 37 are shown in Figure 9 as being composed of the same material as the rest of the funnel, the funnel could be molded of a first material such as polystyrene in a first molding cycle, and then the one or more integral flexible funnel seal rings 37 could be molded from a second much softer material such as polyethylene or rubber in a second molding cycle. The next section of funnel 30 is conical in shape and is bound by inner wall 31, and outer wall 35. The draft angle of outer wall 35, preferably

matches that of inner wall 31 to maintain a uniform wall thickness. Funnel stop 36 protrudes from outer wall 35 and is bound by side walls 48, and end wall 49. Side walls 48 are preferably tapered to improve mold-ability. The top section of funnel 30 is bounded by inner wall 32, outer wall 39, and top wall 42. Inner wall 32 is conical in shape and preferably has a draft angle of 1/2° or less. The draft angle of outer wall 39 is preferably the same as the draft angle of outside wall 6 of base 1. Referring to Figure 8 and Figure 10, top wall 42 contains one or more vent slots 33, bounded by side walls 54, and bottom wall 55. Outer wall 39 of funnel 30 contains one or more lid clamp tabs 34, that protrude from outer wall 39. Each lid clamp tab 34 is bounded by side walls 52, bottom wall 56, sloped surface 43, and outer surface 87. Sloped surface 43 may terminate at bottom wall 56, thus eliminating outer surface 87. The outside diameter of outer surface 87 of the one or more lid clamp tabs of funnel 30 should equal the outside diameter of outer surface 23 of the one or more lid clamp tabs of base 1. The one or more lid clamp tabs 34 should be positioned so that the bottom edge of each lid clamp tab is equidistant from top wall 42 of funnel 30.

Change the paragraph starting on page 39, line 27 as follows:

The end user will receive the filtration apparatus (i.e. assembly 200) assembled as shown in Figure 17. The filtration apparatus will preferably be purchased sterile, and will be removed from its packaging and operated in a clean environment (i.e. a laminar flow hood known in the art). The operator will remove lid 60 from funnel 30, and then add a quantity of liquid to be tested to the interior of funnel 30**, and then place the lid 60 back onto funnel 30**. The liquid will wet filter means 90 and absorbent pad 91. A vacuum source is then connected to outlet port 10 of base 201. Outlet port 10 is in fluid flow communication with one

or more radial drain channels 294r of pad well 27 of base 201, through one or more passages 299 of pad well 27 of base 201, and circular drain channels 294c of pad well 27 of base 201 are in fluid flow communication with one or more radial drain channels 294r of pad well 27 of base 201, hence the pressure in pad well 27 is the same as the pressure in outlet port 10 (positive or negative). The negative pressure (i.e. vacuum) in pad well 27 of base 201 will suck the liquid in funnel 30 through filter means 90, and then through absorbent pad 91, and then through lower filter means 90a, into pad well 27, into outlet port 10, and then into the vacuum source. This will continue until all of the liquid in funnel 30 has been drawn through filter means 90, and through absorbent pad 91, and through lower filter means 90a, until pad well 27 has been emptied. Normally the pore size of filter means 90 is small enough (i.e. approximately 0.45 μm) that the negative pressure of the vacuum does not exceed its bubble point, hence the pores of filter means 90 remain wet. The pore size of lower filter means 90a should be just small enough that the negative pressure of the vacuum does not exceed its bubble point (i.e. between 0.8 μm and 1.2 μm), hence the pores of lower filter means 90a will also remain wet, as will absorbent pad 91. When the filtration step is complete, the vacuum source should be turned off, and the negative pressure in outlet port 10, and hence pad well 27 should be vented to atmospheric pressure.

Once the filtration is complete, Page 41 line 10 says ``The user will now remove lid 60 from funnel 30....'' Therefore is understood that the lid was placed onto the funnel after the liquid was added to the funnel. Hence the change to page 39, line 32.

SECTION III

SUMMARY OF DRAWING CHANGES

The following changes have been made to the drawings:

Figure 9, reference number 43 has been changed to reference number 89.

Figure 13a, reference number 43 has been changed to reference number 89.

Figure 13b, reference number 43 has been changed to reference number 89.

Figure 16, reference number 43 has been changed to reference number 89.

REMARKS-General

Applicant has rewritten all of the claims to define the invention more particularly and distinctly so as to define the invention patentably over the prior art.

RESPONSE TO DETAILED ACTION

SECTION IV

REJECTION OF CLAIM 1 ON KRUEGER

NEW INDEPENDENT CLAIM 58

In the last office action dated October 7, 2003, Claim 1 was rejected based on Krueger. This claim has been canceled. New Independent Claim 58 is substituted for canceled Claim 1. New Independent Claims 58 has been written to define patentably over this reference. Applicant believes that New Independent Claim 58 is proper, definite and defines novel structures that are also unobvious. Applicant requests reconsideration of this rejection, as now applicable to New Independent Claim 58 for the following reasons:

Remarks Regarding New Independent Claim 58 In Response To Paragraph 3 Of The Detailed Action

New Independent Claim 58 has been written to overcome the objections of paragraph 3 of the Detailed Action. New Independent Claim 58 contains the following features:

(1) **New Independent Claim 58 contains** ``a base containing a funnel well with *a filter seal surface integral to said base, disposed adjacent to the bottom of the inside wall of said funnel well*''

Krueger does not contain *a filter seal surface integral to the base, disposed adjacent to the bottom of the inside wall of the funnel well.* In the second embodiment of Krueger the filter seal surface is part of the funnel like member 63 which is a separate component from the base (i.e. receptacle 71), as shown in Figure 4-6 of Krueger, and as described in the following quotes from Krueger. Also the filter seal surface of Krueger

is disposed above the bottom of the inside wall of the funnel well, not adjacent to the bottom of the inside wall of said funnel well. The shoulder 76 is not the filter seal surface.

Column 3 line 54 of Krueger states, ``Means is provided for supporting the lower surface of the filter medium or disc 59 and forming a liquid-tight seal between the filter medium and the body 56 and consists of a funnel-like member 63. The funnel like member 63 is provided with an annular *rim-like portion 63a which provides a planar surface parallel to the plane of the filter medium 59 and serving to support the outer margin of the filter medium immediately underlying the lip portion 56a of the body 56.*

Column 4 line 23 of Krueger states, ``A shoulder 76 is provided in the side wall 72 *for supporting the outer margin of the funnel-like member 63.*

From the above two quotes, the filter medium in Krueger (Figures 4-6) is supported by the funnel-like member 63, and the filter medium is sealed between the annular rim-like portion 63a of funnel like member 63, and the lip portion 56a of the body 56, not between the lip portion 56a of the body 56 and shoulder 76 of receptacle 71. In Krueger the funnel-like member 63 is not an integral part of the base (i.e. receptacle 71). The funnel-like member 63 in Krueger is a separate component, and must be made that way in order to create the other features of receptacle 71 (i.e. the hollow receptacle, and the pour spout). Hence Krueger requires three components, a base (i.e. receptacle 71), a funnel (i.e. body 56), and a funnel-like member 63. Shoulder 76 of Krueger is used to support the funnel-like member 63, not the filter medium. Hence shoulder 76 is not a filter seal surface. Therefore the filter seal surface of Krueger is disposed above the bottom of the inside wall of the funnel well, not adjacent to the bottom of the inside wall of said funnel well.

In applicants new claim 58 only two components are required, a base and a funnel. In applicants new claim 58 the filter seal surface is an integral part of the base disposed adjacent to the bottom of the inside wall of the funnel well, not a separate component as taught in the second embodiment of Krueger.

Th first embodiment of Krueger does not contain a filter seal surface as shown in Figure 1-3 of Krueger, and as described in the following quotes from Krueger.

Column 2, line 54 of Krueger states, ``The ribs 21, 23, 25, and 27 all have upper surfaces which lie in a common plane and which are adapted to support a sheet of filter medium 29. By employing ribs having a relatively small upper surface, substantially all of the area of the sheet of the filter medium 29 is available for filtration while still providing adequate support for the filter medium.

The body 7 has an inturned shoulder 31 at its bottom extremity to hold the filter medium 29 in place during transportation, storage, and use. The shoulder 31 also clamps the edge of the filter medium so that there is no chance of liquid bypassing the filter medium.''

From the above quote the funnel like member 15 of **Krueger does not contain** a filter seal surface. The entire area of filter medium 29 is supported by ribs 21, 23, 25, and 27, and the filter medium is sealed to the device by clamping the filter medium with shoulder 31, not by compressing the filter medium between shoulder 31 and a filter seal surface.

(2) **New Independent Claim 58 contains** ``a base containing a funnel well with a filter seal surface integral to said base, disposed adjacent to the bottom of the inside wall of said funnel well, *with a filter support means integral to said base, disposed in the bottom of said funnel well inside of said filter seal surface, with an outlet port integral to said base disposed below said filter support means, said outlet port being in direct fluid flow communication with said filter support means*''

Krueger does not contain a filter support means integral to the base, disposed in the bottom of the funnel well inside of the filter seal surface of the base, in the first embodiment shown in Figures 1-3 of Krueger. As described above in Section (1).

The second embodiment of **Krueger does not contain** a filter support means integral to said base, disposed in the bottom of the funnel well inside

of the filter seal surface, with an outlet port integral to the base disposed below the filter support means, the outlet port being in direct fluid flow communication with the filter support means. Krueger's filter support means is part of the funnel-like member 63 which is a separate component from the base (i.e. receptacle 71), as shown in Figure 4-6 of Krueger, and as described in the following quotes from Krueger. The outlet port 64 of Krueger is also part of funnel-like member 63 which is a separate component from the base. If pour spout 78 is considered the outlet port of receptacle 71, it is not in direct fluid flow communication with the filter support means.

Column 3, line 71 of Krueger states, ``The funnel-like member 63 is provided with additional means for providing adequate support for the filter medium 59 which consists of a plurality of diametrically extending ribs 66 which are displaced angularly from each other. The funnel-like member 63 is also provided with additional ribs 67 and 68 which extend radially of the funnel-like member and which are angularly displaced from each other and the ribs 66. As can be seen particularly in FIGURE 5, the ribs 67 extend from the rim-like portion 63a to the opening 64 whereas the ribs 67 and 68 do not extend to the opening 64. The ribs 66, 67 and 68 are provided with upper surfaces which lie in the same plane as the upper surface of the rim-like portion 63a and immediately underlie the filter medium 59 to support the same.''

From the above quote, the filter medium in Krueger (Figures 4-6) is supported by the funnel-like member 63, which is not an integral part of receptacle 71. The funnel-like member 63 in Krueger is a separate component, and must be made that way in order to create the other features of receptacle 71 (i.e. the hollow receptacle, and the pour spout). Hence Krueger requires three components, a base (i.e. receptacle 71), a funnel (i.e. body 56), and a funnel-like member 63.

In applicants new claim 58 only two components are required, a base and a funnel. In applicants new claim 58 the filter support means is an integral part of the base not a separate component as taught in the second embodiment of Krueger, and the outlet port is also an integral part of the base.

(3) **New Independent Claim 58 contains** ``a funnel with an open top, , said funnel *containing an integral flexible filter seal, with at least a portion of said integral flexible filter seal disposed below the bottom surface of the outside wall of the funnel, said integral flexible filter seal being compressible in the vertical direction,*''

``a filter means disposed in the bottom portion of said funnel well *with the outer periphery of the downstream surface of said filter means lying in the same plane as the integral filter seal surface of said base,*''

with the bottom portion of said funnel releasably attached to said base, *with the integral flexible filter seal of the funnel inserted into the funnel well of the base a sufficient distance to compress the integral flexible filter seal of the funnel in the vertical direction, thereby releasably sealing the outer periphery of the filter means with a leak tight seal between the integral filter seal surface of the base and the bottom surface of the compressed integral filter seal of the funnel, said releasable seal allowing the filter means to be removed from the apparatus after first removing the funnel,*

whereby the integral flexible filter seal of the funnel can be compressed a sufficient distance in the vertical direction to releasably seal filter means of varying thickness', with a leak tight seal between said integral filter seal surface of said base and the bottom surface of said integral flexible seal of said funnel.''

Applicants New Independent Claim 58 contains:

(a) **Applicants New Independent Claim 58 contains** a funnel containing an integral flexible filter seal, with at least a portion of the integral flexible filter seal disposed below the bottom surface of the outside wall of the funnel, said integral flexible filter seal being compressible in the vertical direction.

(b) **Applicants New Independent Claim 58 contains** a filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as the integral filter seal surface of the base.

(c) **Applicants New Independent Claim 58 has** the bottom portion of the funnel releasably attached to the base, with the integral flexible filter seal of the funnel inserted into the funnel well of the base a sufficient distance to compress the integral flexible filter seal of the funnel in the vertical direction.

(d) **Applicants New Independent Claim 58 has** the outer periphery of the filter means releasably sealed with a leak tight seal between the integral filter seal surface of the base and the bottom surface of the compressed integral filter seal of the funnel, the releasable seal allowing the filter means to be removed from the apparatus after first removing the funnel.

(e) **In applicants New Independent Claim 58** the integral flexible filter seal of the funnel can be compressed a sufficient distance in the vertical direction to releasably seal filter means of varying thickness', with a leak tight seal between said integral filter seal surface of the base and the bottom surface of the integral flexible seal of the funnel.

Krueger does not contain a filter means disposed in the bottom portion of the funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as the integral filter seal surface of the base. Nor does the funnel of Krueger contain an integral flexible filter seal, with at least a portion of the integral flexible filter seal disposed below the bottom surface of the outside wall of the funnel, the integral flexible filter seal being compressible in the vertical direction when the funnel is releasably attached to the base, with the partially compressed integral flexible filter seal releasably sealing the filter means between the integral filter seal surface of the base and the bottom of the partially compressed integral flexible filter seal of the funnel with a leak tight seal, the releasable seal allowing the filter means to be removed from the apparatus after first removing the funnel. These points are verified by referring to Figures 1-6 of Krueger, and by the following quotes from Krueger.

Section (1) above explains that **Krueger does not have** a filter seal surface that is integral to the base. Therefore Krueger can not have filter means disposed in the bottom portion of the funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as the integral filter seal surface of the base.

> Column 2 line 39 of Krueger states, ``The top portion of body 7 has an outwardly extending lip formed integral therewith so that a snap-on top or cap 11 can be retained in an airtight relationship on the body 7. A similar outwardly extending lip 13 is provided on the bottom portion of body 7 which is utilized to retain a snap-on funnel like member.''
>
> Column 2, line 62 of Krueger states, ``The body 7 has an inturned shoulder 31 at its bottom extremity to hold the filter medium 29 in place during transportation, storage, and use. The shoulder 31 also clamps the edge of the filter medium so that there is no chance of liquid bypassing the filter medium.''
>
> Column 3 line 27 of Krueger states, ``Preferably the filter unit is made to a relatively soft plastic so that the parts can be readily snapped together, such as polyethylene, polypropylene' or nylon. On the other hand, certain parts can be made of hard plastic. For example, *body 7 may be made of a hard acrylic resin while the end members may be of a relatively soft plastic.*''

The above three quotes refer to the embodiment shown in Figures 1 through 3 of Krueger. **Krueger does not teach** that shoulder 31 is an integral flexible seal. To the contrary, Krueger states that shoulder 31 can be made from a hard plastic such as a hard acrylic resin. The bottom surface of shoulder 31 lies in the same plane as the bottom of the side wall of hollow body 7, not below the bottom of the side wall. The outwardly extending lip 13 of Krueger is provided on the bottom portion of body 7 which is utilized to retain a snap-on funnel like member. As shown in Figure 1 of Krueger the outwardly extending lip 13 of hollow body 7 fits into a groove in the side wall of the funnel like member 15, thereby locking the hollow body 7 in a fixed vertical position relative to the funnel like member 15. Therefore, the seal between the bottom surface of the shoulder 31 and the top surface of the filter medium 29 is dependent upon the position of the groove in the side wall of funnel-like member 15 and not on flexing of shoulder 31. Krueger states that the funnel-like member must be made from a relatively soft plastic, and that hollow body 7 may be made from a relatively soft plastic or from a hard plastic. The only reason Krueger gives for using a relatively soft plastic is so that the parts can be readily snapped together, not to make an integral flexible filter seal.

> Column 3 line 44 of Krueger states, ``As can be seen particularly from FIGURE 4, the body 56 is provided with an inwardly extending annular lip portion 56a which overlies the filter disc 59. It can be seen that the body 56 forms a chamber 61 for receiving the liquid to be filtered by the filter unit. *The liquid passes downwardly to the filter medium 59 through the opening 62 formed by the annular lip portion 56a.*
>
> Column 4, line 46 of Krueger states, ``Thus, the filter unit can be formed either of polypropylene or polycarbonate. Polycarbonate is desirable because it is glass clear whereas polypropylene is desirable because it is more resistant chemically.''
>
> Column 5, line 36 of Krueger states in claim 1, ``said body having an inwardly extending, *substantially non-deformable lip* overlying the filter medium and serving to permanently retain the filter medium...''

The above three quotes refer to the embodiment shown in Figures 4 through 6 of Krueger. **Krueger does not teach** that inwardly extending annular lip portion 56a is an integral flexible seal. To the contrary, Krueger states that inwardly extending annular lip portion 56a can be made from a hard plastic such as polycarbonate. Furthermore, Krueger never states that inwardly extending annular lip portion 56a acts as a flexible seal. Instead Krueger states that the inwardly extending annular lip portion 56a *acts to direct the flow of liquid through the opening 62*. Furthermore in his first claim, Krueger states that the inwardly extending lip is substantially non-deformable. The only reason Krueger gives for making the second embodiment from polypropylene is for chemical resistance, not to make the parts flexible.

The concept of using an flexible filter seal that is integral to the funnel, that is compressed in the vertical direction when the funnel is releasably attached to the base, thereby releasably sealing the filter means between the bottom surface of the integral flexible seal of the funnel and the integral seal surface of the base is entirely foreign to Krueger. Also the concept of using an flexible filter seal that is integral to the funnel, that has sufficient compressibility in the vertical direction to releasable seal the filter means between the integral flexible

seal of the funnel and the integral seal surface of the base for varying thickness' of the filter means, is also entirely foreign to Krueger.

SECTION IV-A

NEW DEPENDENT CLAIMS 59-68

Applicant believes that New Independent Claim 58 is proper, definite and defines a novel structure that is also unobvious. Therefore dependent claims 59-68 that incorporate all of the subject matter of New Independent Claim 58 and add additional subject matter and further limit New Independent Claim 58 should also be patentable over Krueger.

SECTION V

REJECTION OF CLAIM 22 ON KRUEGER

NEW INDEPENDENT CLAIM 69

In the last office action dated October 7, 2003, Claim 22 was rejected based on Krueger. This claim has been canceled. New Independent Claim 69 is substituted for canceled Claim 22. New Independent Claim 69 have been written to define patentably over this reference. Applicant believes that New Independent Claim 69 is proper, definite and defines novel structures that are also unobvious. Applicant requests reconsideration of this rejection, as now applicable to New Independent Claim 69 for the following reasons:

In Response To Paragraph 5 Of The Detailed Action

New Independent Claim 69 has been written to overcome the objections of paragraph 5 of the Detailed Action. New Independent Claim 69 contains the following features:

(1) **New Independent Claim 69 has** ``a base containing a funnel well with a *filter seal surface integral to said base, disposed adjacent to the bottom of the inside wall of said funnel well,*''

Krueger does not contain *a filter seal surface integral to the base, disposed adjacent to the bottom of the inside wall of the funnel well.*

In the second embodiment Krueger's filter seal surface is part of the funnel like member 63 which is a separate component from the base (i.e. receptacle 71). Also the filter seal surface of Krueger is disposed above the bottom of the inside wall of the funnel well, not adjacent to the bottom of the inside wall of said funnel well.

The first embodiment of Krueger does not contain a filter seal surface.

See Figure 1-6 of Krueger. Also see the detailed explanation in section (1) of the Remarks Regarding New Independent Claim 58.

In applicants new claim 69 only two components are required, a base and a funnel. In applicants new claim 69 the filter seal surface is an integral part of the base disposed adjacent to the bottom of the inside wall of the funnel well, not a separate component as taught in the second embodiment of Krueger.

(2) **New Independent Claim 69 has** ``a base containing a funnel well with a filter seal surface integral to said base, disposed adjacent to the bottom of the inside wall of said funnel well, said inside wall being substantially cylindrical in shape, *with a filter support means integral to said base, disposed in the bottom of said funnel well inside of said filter seal surface,*''

Krueger does not contain a filter support means integral to the base, disposed in the bottom of the funnel well inside of the filter seal surface of the base, in either the first embodiment shown in Figures 1-3, or in the second embodiment shown in Figure 4-6, and as described in detail in Section (2) of the Remarks Regarding New Independent Claim 58. In the second embodiment, Krueger's filter support means is part of the funnel like member 63 which is a separate component from the base (i.e. receptacle 71), as shown in Figure 4-6.

In applicants new Claim 69 only two components are required, a base and a funnel. In applicants new Claim 69 the filter support means is an integral part of the base not a separate

component as taught in the second embodiment of Krueger.

(3) **New Independent Claim 69 has** ``a base containing a funnel well with a filter seal surface integral to said base, disposed adjacent to the bottom of the inside wall of said funnel well, *said inside wall being substantially cylindrical in shape*,''

``a funnel with an open top, *with one or more integral flexible funnel seal rings protruding from the bottom portion of the outside wall of said funnel above the bottom surface of said funnel*,''

``with *the outside diameter of the one or more integral flexible funnel seal rings being sufficiently greater than the inside diameter of the substantially cylindrical inside wall of the funnel well of the base, and with the height of the substantially cylindrical inside wall of the funnel well of the base being sufficiently high, so that the entire bottom portion of the funnel containing the one or more integral flexible funnel seal rings can be pressed into the funnel well of the base until the outer periphery of the filter means is compressed between the bottom surface of the funnel and the integral filter seal surface of the base, with the one or more integral flexible funnel seal rings of the funnel being forced to deflect upward as the are inserted into the funnel well of the base, with the one or more integral flexible funnel seal rings remaining deflected upward for as long as the bottom portion of the funnel containing the one or more integral flexible funnel seal rings is inserted into the base, thereby releasably attaching the funnel to the base with an interference fit between end wall of the upwardly deflected one or more integral flexible funnel seal rings of the funnel and the substantially cylindrical inside wall of the funnel well of the base, with the releasable attachment between the funnel and the base being sufficiently strong to prevent the funnel from being accidentally disengaged from the base, while allowing the funnel to be easily removed from the base by the user*,''

``*thereby releasably sealing the filter means to the filtration apparatus with a leak tight seal between the bottom surface of the funnel and the integral*

filter seal surface of the base for all values of thickness of the filter means greater than zero''

``said releasable filter seal *allowing the filter means to be removed from the apparatus after first removing the funnel''*

Applicants New Independent Claim 69 contains:

(a) **New Independent Claim 69 contains** a base containing a funnel well with the inside wall of the funnel well being substantially cylindrical in shape.

(b) **New Independent Claim 69 contains** one or more integral flexible funnel seal rings protruding from the bottom portion of the outside wall of the funnel, above the bottom surface of the funnel.

(c) **New Independent Claim 69 has** the outside diameter of the one or more flexible funnel seal rings being sufficiently greater than the inside diameter of the substantially cylindrical inside wall of the funnel well of the base, so that:

(i) When the bottom portion of the funnel containing the one or more integral flexible seal rings is pressed into the funnel well of the base until the outer periphery of the filter means is compressed between the bottom edge of the funnel and the integral filter seal surface of the base,

(ii) The one or more integral flexible funnel seal rings of the funnel will forced to deflect upward as the are inserted into the funnel well of the base.

(iii) With the one or more integral flexible funnel seal rings remaining deflected upward for as long as the bottom portion of the funnel is inserted into the base.

(iv) Thereby releasably attaching the funnel to the base with an interference fit between end wall of the upwardly deflected one or more integral flexible funnel seal rings of the funnel and the substantially cylindrical inside wall of the funnel well of the base.

(v) With the releasable attachment between the funnel and the base being sufficiently strong to prevent the funnel from being accidentally disengaged from the base, while allowing the

funnel to be easily removed from the base by the user.

(vi) Thereby releasably sealing the filter means to the filtration apparatus with a leak tight seal between the bottom surface of the funnel and the integral filter seal surface of the base for all values of thickness of the filter means greater than zero.

(vii) The releasable filter seal allowing the filter means to be removed from the apparatus after first removing the funnel.

The first embodiment of Krueger does not contain any of the above mentioned features for the following reasons:

(a) **The first embodiment of Krueger does not contain** *a funnel well with the inside wall of the funnel well being substantially cylindrical*. The inside wall of the funnel well of the base (i.e. hollow body 7) contains a groove to accept the outwardly extending lip 13 when the hollow body 7 is snapped fitted to the funnel like member 15.

(b) **The first embodiment of Krueger does not contain** *one or more flexible funnel seal rings protruding from the bottom portion of the outside wall of the funnel, above the bottom edge of the funnel for the following reasons*:

(i) The geometry of the outwardly extending lip 13 shown in Figure 1 of Krueger, shows that the lip contain a chamfer that starts at the upper outside edge of the outwardly extending lip 13 and extends upward to the outside wall of hollow body 7. This chamfer will stiffen outwardly extending lip 13. Furthermore the height of outwardly extending lip 13 as shown in Figure 1 is approximately double the distance from the outside wall of hollow body 7 to the outside edge of outwardly extending lip 13. This geometry prevents outwardly extending lip 13 from being flexible even when made from a material such as polyethylene, polypropylene. No where in the specification does Krueger refer to outwardly extending lip 13 as a flexible outwardly extending lip. To the contrary the following quote from Krueger states just the opposite.

Column 3 line 27 of Krueger states, ``Preferably the filter unit is made to a relatively soft plastic so that the parts can be readily *snapped together*, such as polyethylene, polypropylene, or nylon. On the other hand, certain parts can be made of hard plastic. For example, the body 7 may be made of a hard acrylic resin while the end members may be made of a relatively soft plastic.''

(c) **The first embodiment of Krueger does not contain** one or more integral flexible funnel seal rings protruding from the bottom portion of the outside wall of the funnel, above the bottom surface of the funnel, *with the outside diameter of the one or more flexible funnel seal rings being sufficiently greater than the inside diameter of the substantially cylindrical inside wall of the funnel well of the base, so that when the bottom portion of the funnel containing the one or more integral flexible seal rings is pressed into the funnel well of the base until the outer periphery of the filter means is compressed between the bottom surface of the funnel and the integral filter seal surface of the base.*

In the first embodiment of Krueger the relative position of the funnel (i.e. hollow body 7) to the base (i.e. funnel-like member 15) is fixed. The outwardly extending lip 13 snaps into the groove of the inner side wall of the base (i.e. funnel-like member 15) thereby locking the funnel to the base in one position only. Therefore the funnel can not be pressed into the base until the filter means is compressed between the bottom edge of the funnel and the integral filter seal surface of the base. The funnel in the first embodiment of Krueger can only be inserted into the base until the outwardly extending lip 13 snaps into the groove of the inside wall of the funnel-like member 15. Furthermore as explained above the base (i.e. funnel-like member 15 does not contain an integral filter seal surface, nor does it contain a substantially cylindrical inside wall of the funnel well.

(d) **The first embodiment of Krueger does not contain** one or more integral flexible funnel seal rings protruding from the bottom portion of the outside wall of the funnel, above the bottom edge of the funnel, with the outside diameter of the one or more flexible funnel seal rings being sufficiently greater than the

inside diameter of the substantially cylindrical inside wall of the funnel well of the base, so that when the bottom portion of the funnel containing the one or more integral flexible seal rings is pressed into the funnel well of the base until the outer periphery of the filter means is compressed between the bottom surface of the funnel and the integral filter seal surface of the base. *With the one or more integral flexible funnel seal rings of the funnel forced to deflect upward as the are inserted into the funnel well of the base. With the one or more integral flexible funnel seal rings remaining deflected upward for as long as the bottom portion of the funnel is inserted into the base.*

As just explained the first embodiment of **Krueger does not contain** one or more integral flexible funnel seal rings. Furthermore as shown in Figure 1 of Krueger, the outwardly extending lip 13 is not deflected upward when it is snapped into the groove in the inside wall of funnel-like member 15.

Column 3 line 27 of Krueger states, ``Preferably the filter unit is made to a relatively soft plastic so that the parts can be readily *snapped together*, such as polyethylene, polypropylene, or nylon. On the other hand, certain parts can be made of hard plastic. For example, the body 7 may be made of a hard acrylic resin while the end members may be made of a relatively soft plastic.''

Because the body 7 can be made from a hard plastic, and the end member (i.e. funnel-like member 15) must be made from a relatively soft plastic, Krueger counts on the inside wall of the funnel-like member 15 expanding outward when body 7 is inserted into it. Krueger does not depend on the outwardly extending lip 13 deflecting upward when body 7 is inserted into funnel-like member 15. Furthermore as shown in Figure 1, the outside wall of body 7 has the same diameter as the inside wall of funnel-like member 15. Hence, the only way that body can be inserted into funnel-like member 15 is for the side wall of funnel-like member 15 to expand outward.

(e) **The first embodiment of Krueger does not contain** one or more integral flexible funnel seal rings protruding from the bottom portion of the outside wall of the funnel, above the bottom surface of the funnel, with the outside diameter of the one or more flexible funnel seal rings being sufficiently greater than the inside diameter of the substantially cylindrical inside wall of the funnel well of the base, so that when the bottom portion of the funnel containing the one or more

integral flexible seal rings is pressed into the funnel well of the base until the outer periphery of the filter means is compressed between the bottom surface of the funnel and the integral filter seal surface of the base. With the one or more integral flexible funnel seal rings of the funnel forced to deflect upward as the are inserted into the funnel well of the base. With the one or more integral flexible funnel seal rings remaining deflected upward for as long as the bottom portion of the funnel is inserted into the base. *Thereby releasably attaching the funnel to the base with an interference fit between end wall of the upwardly deflected one or more integral flexible funnel seal rings of the funnel and the substantially cylindrical inside wall of the funnel well of the base.*

As shown in Figure 1 of Krueger the outwardly extending lip 13 snaps into a groove in the inside wall of funnel-like member 15 to releasably attach body 7 to funnel-like member 15. In Figure 1 of Krueger, the outwardly extending lip 13 is not deflected upward, nor is there an interference fit the end wall of the outwardly extending lip 13 and a substantially cylindrical inside wall of the funnel well of the base.

(f) **The first embodiment of Krueger does not contain** one or more integral flexible funnel seal rings protruding from the bottom portion of the outside wall of the funnel, above the bottom edge of the funnel, with the outside diameter of the one or more flexible funnel seal rings being sufficiently greater than the inside diameter of the substantially cylindrical inside wall of the funnel well of the base, so that when the bottom portion of the funnel containing the one or more integral flexible seal rings is pressed into the funnel well of the base until the outer periphery of the filter means is compressed between the bottom surface of the funnel and the integral filter seal surface of the base. With the one or more integral flexible funnel seal rings of the funnel forced to deflect upward as the are inserted into the funnel well of the base. With the one or more integral flexible funnel seal rings remaining deflected upward for as long as the bottom portion of the funnel is inserted into the base. Thereby releasably attaching the funnel to the base with an interference fit between end wall of the upwardly deflected one or more integral flexible funnel seal rings of the funnel and the substantially cylindrical inside wall of the funnel well of the base. *Thereby releasably sealing the filter means to the filtration apparatus with a leak tight seal between the bottom surface of the funnel and the integral filter*

seal surface of the base for all values of thickness of the filter means greater than zero.

As stated above the **first embodiment of Krueger does not contain** a base with an integral filter seal surface. Also as stated in (c) above the relative position of the body 7 to the funnel-like member 15 is fixed by the snap fit between the two members. Therefore the first embodiment of Krueger can only seal filter means of one thickness. The first embodiment of Krueger does not provide any means to compensate for varying thickness' of the filter means.

The second embodiment of Krueger contains a base containing a funnel well with the inside wall of the funnel well being substantially cylindrical in shape.

However **the second embodiment of Krueger does not contain** any of the following features that are described in applicants new claim 69:

(a) **The second embodiment of Krueger does not contain** One or more integral flexible funnel seal rings protruding from the bottom portion of the outside wall of the funnel, above the bottom edge of the funnel.

With the outside diameter of the one or more flexible funnel seal rings being sufficiently greater than the inside diameter of the substantially cylindrical inside wall of the funnel well of the base, so that:

(i) When the bottom portion of the funnel containing the one or more integral flexible seal rings is pressed into the funnel well of the base until the outer periphery of the filter means is compressed between the bottom surface of the funnel and the integral filter seal surface of the base. As explained in section (1) above the second embodiment of Krueger does not contain an integral filter seal surface of the base.

(ii) The one or more integral flexible funnel seal rings of the funnel will forced to deflect upward as the are inserted into the funnel well of the base.

(iii) With the one or more integral flexible funnel seal rings remaining deflected upward for as long as the bottom portion of the funnel is inserted into the base.

(iv) Thereby releasably attaching the funnel to the base with an interference fit between end wall of the upwardly deflected one or more integral flexible funnel seal rings of the funnel and the substantially cylindrical inside wall of the funnel well of the base.

(v) With the releasable attachment between the funnel and the base being sufficiently strong to prevent the funnel from being accidentally disengaged from the base, while allowing the funnel to be easily removed from the base by the user.

(vi) Thereby releasably sealing the filter means to the filtration apparatus with a leak tight seal between the bottom surface of the funnel and the integral filter seal surface of the base for all values of thickness of the filter means greater than zero.

(vii) The releasable filter seal allowing the filter means to be removed from the apparatus after first removing the funnel.

In the second embodiment of Krueger the funnel (i.e. body 56) is not attached to the base (i.e. receptacle 71) with an interference fit between end wall of the upwardly deflected one or more integral flexible funnel seal rings of the funnel and the substantially cylindrical inside wall of the funnel well of the base, but is permanently secured to the base as shown in Figure 4-6 of Krueger, and as described in the following quotes from Krueger.

Column 2 line 31 of Krueger states, ``In one of the embodiments of the invention, a filtrate receptacle is secured to the body to receive the filtrate as it passes through the filter medium. The receptacle is provided with a pour spout to permit the filtrate to be poured from the receptacle.''

Column 4 line 19 of Krueger states, ``The upper portion of the side wall 72 is provided with a substantially cylindrical rim-like portion 72a which is adapted to receive the funnel-like member 63, the filter medium 59 and the lower extremity of body 56. A shoulder 76 is provided in the side wall 72 for supporting the outer margin of the funnel-like member 63. It is generally preferable that the cylindrical body 56 be permanently secured to the rim like portion 72a by suitable

means such as cement so that an integral unit is formed by the body 56 and the receptacle 72 with the filter medium 59 being disposed therebetween.

Column 5 line 10 of Krueger states, ``By securing the body 56 to the receptacle 72, it is possible to prevent re-use of the filter unit because of inability to replace the filter medium.

From the above three quotes **the funnel** (i.e. body 56) **is not releasably attached to the base** (i.e. receptacle 71) with an interference fit between end wall of the upwardly deflected one or more integral flexible funnel seal rings of the funnel and the substantially cylindrical inside wall of the funnel well of the base, but is permanently secured to the base, to prevent the funnel from being removed from the base. Hence the pour spout is provided to retrieve the filtered liquid from receptacle 71.

Furthermore, the second embodiment of **Krueger does not contain** one or more integral flexible funnel seal rings.

Furthermore, the filter means in the second embodiment of **Krueger is not releasably sealed to the apparatus**. The filter means of the second embodiment of Krueger can not be removed from the apparatus because the funnel is permanently secured to the base.

Furthermore, the only way filter means of varying thickness can be sealed to the apparatus of the second embodiment of Krueger is to position the funnel into the base until the inwardly extending annular lip portion 56a of body 56 touches the filter means, and then cement it in place in that position.

The examiners suggestion in section 5 of the Detailed Action that the base of the second embodiment (i.e. receptacle 71) be combined with the funnel of the first embodiment (i.e. body 7) is not anticipated by Krueger. There is no drawing that shows this combination, nor is there any suggestion in the specification of Krueger that indicates this combination. It is also unobvious to make this combination since it was not anticipated by Krueger or by any of the other references. Furthermore the combination does not create the apparatus described in applicants new Claim 69.

Furthermore, even if the base of the second embodiment (i.e. receptacle 71) is combined with the funnel of the first embodiment (i.e. body 7), the resulting combination

does not create the apparatus described in applicants new Claim 69 for all of the above stated reasons.

SECTION VA

NEW DEPENDENT CLAIMS 70-79

Applicant believes that New Independent Claim 69 is proper, definite and defines a novel structure that is also unobvious. Therefore dependent claims 70-79 that incorporate all of the subject matter of New Independent Claim 69 and add additional subject matter and further limit New Independent Claim 69 should also be patentable over Krueger.

SECTION VI

REJECTION OF CLAIM 36 ON KRUEGER AND JONES, JR.

NEW INDEPENDENT CLAIM 80

In the last office action dated October 7, 2003, Claim 36 was rejected based on Krueger and Jones Jr. et al. This claim has been canceled. New Independent Claim 80 is substituted for canceled Claim 36. New Independent Claim 80 has been written to define patentably over these references. Applicant believes that New Independent Claim 80 is proper, definite and defines novel structures that are also unobvious. Applicant requests reconsideration of this rejection, as now applicable to New Independent Claim 80 for the following reasons:

General Remarks Regarding New Independent Claim 80

(1) There is no justification , in Krueger and Jones Jr. et al., or in any other prior art separate from applicants disclosure, which suggests that these references be combined, much less combined in the manner proposed.

(2) The proposed combination would not be physically possible or operative.
(3) Even if Krueger and Jones Jr. et al. were to be combined in the manner proposed, the proposed combination would not show all of the novel physical features of new claim 80.
(4) These novel physical features of new claim 80 produce new and unexpected results and hence are unobvious and patentable over these references.

In Response To Paragraph 14 Of The Detailed Action

New Independent Claim 80 has been written to overcome the objections of paragraphs 14 of the Detailed Action. New Independent Claim 80 contains the following features:

(1) Independent Claim 80 states: ``a base containing a funnel well with *a filter seal surface disposed adjacent to the bottom of the inside wall of said funnel well, with an absorbent pad support means disposed in the bottom of said funnel well inside of said filter seal surface, entirely below said filter seal surface, thereby creating a pad well below said filter seal surface,*''

In Krueger's second embodiment the filter seal surface is part of the funnel like member 63 not shoulder 76. Therefore the filter seal surface is not disposed adjacent to the bottom of the inside wall of the funnel well, but above the bottom of the inside wall of the funnel well. The absorbent pad support means (i.e. the filter support means of Krueger) is not disposed below the filter seal surface, as shown in Figure 4-6 of Krueger, and as described in the following quotes from Krueger, but in the same plane as the filter seal surface.

Column 3 line 54 of Krueger states, ``Means is provided for supporting the lower surface of the filter medium or disc 59 and forming a liquid-tight seal between the filter medium and the body 56 and consists of a funnel-like member 63. The funnel like member 63 is provided with an annular rim-like portion 63a which provides a planar surface parallel to the plane of the filter medium 59 and serving to support the outer margin of the filter medium immediately underlying the lip portion 56a of the body 56.

Column 4 line 23 of Krueger states, ``A shoulder 76 is provided in the side wall 72 for supporting the outer margin of the funnel-like member 63.

Column 3, line 71 of Krueger states, ``The funnel-like member 63 is provided with additional means for providing adequate support for the filter medium 59 which consists of a plurality of diametrically extending ribs 66 which are displaced angularly from each other. The funnel-like member 63 is also provided with additional ribs 67 and 68 which extend radially of the funnel-like member and which are angularly displaced from each other and the ribs 66. As can be seen particularly in FIGURE 5, the ribs 67 extend from the rim-like portion 63a to the opening 64 whereas the ribs 67 and 68 do not extend to the opening 64. The ribs 66, 67 and 68 are provided with upper surfaces which lie in the same plane as the upper surface of the rim-like portion 63a and immediately underlie the filter medium 59 to support the same.''

From the above three quotes the filter seal surface of the second embodiment of Krueger is the annular rim-like portion 63a of funnel-like member 63, not shoulder 76 of the base (i.e. receptacle 71). The filter support means of the second embodiment of Krueger are the ribs 66, 67, and 68, the top surface of which lie in the same plane as the filter seal surface (i.e. annular rim-like portion 63a of funnel-like member 63), not below the filter seal surface. Therefore, the second embodiment of Krueger does not contain a pad well below the filter seal surface.

The first embodiment of Krueger does not contain a filter seal surface, nor does it contain a pad well below a filter seal surface, as shown in Figure 1-3 of Krueger, and as described in the following quotes from Krueger.

Column 2, line 54 of Krueger states, ``The ribs 21, 23, 25, and 27 all have upper surfaces which lie in a common plane and which are adapted to support a sheet of filter medium 29. By employing ribs having a relatively small upper surface, substantially all of the area of the sheet of the filter medium 29 is available for filtration while still providing adequate support for the filter medium.

The body 7 has an inturned shoulder 31 at its bottom extremity to hold the filter medium 29 in

place during transportation, storage, and use. The shoulder 31 also clamps the edge of the filter medium so that there is no chance of liquid bypassing the filter medium.''

From the above quote the funnel like member 15 of Krueger does not contain a filter seal surface. The entire area of filter medium 29 is supported by ribs 21, 23, 25, and 27, and the filter medium is sealed to the device by clamping the filter medium with shoulder 31, not by compressing the filter medium between shoulder 31 and a filter seal surface. Nor does the first embodiment of Krueger contain a pad well.

(2) Independent Claim 80 states: ``*with the bottom portion of said funnel releasably attached to said base thereby creating a reservoir for un-filtered liquid above said filter means*,''

In the second embodiment of Krueger the funnel (i.e. body 56) is not releasably attached to the base (i.e. receptacle 71), but is permanently secured to the base as shown in Figure 4-6 of Krueger, and as described in the following quotes from Krueger.

Column 2 line 31 of Krueger states, ``In one of the embodiments of the invention, a filtrate receptacle is secured to the body to receive the filtrate as it passes through the filter medium. The receptacle is provided with a pour spout to permit the filtrate to be poured from the receptacle.''

Column 4 line 19 of Krueger states, ``The upper portion of the side wall 72 is provided with a substantially cylindrical rim-like portion 72a which is adapted to receive the funnel-like member 63, the filter medium 59 and the lower extremity of body 56. A shoulder 76 is provided in the side wall 72 for supporting the outer margin of the funnel-like member 63. It is generally preferable that the cylindrical body 56 be permanently secured to the rim like portion 72a by suitable means such as cement so that an integral unit is formed by the body 56 and the receptacle 72 with the filter medium 59 being disposed therebetween.

Column 5 line 10 of Krueger states, ``By securing the body 56 to the receptacle 72, it is possible to prevent re-use of the filter unit because of inability to replace the filter medium.

From the above three quotes **the funnel** (i.e. body 56) **is not releasably attached to the base** (i.e. receptacle 71), but is permanently secured to the base, to prevent the funnel from being removed from the base. Hence the pour spout is provided to retrieve the filtered liquid from receptacle 71. Nowhere in the specification does Krueger describe a releasable attachment between the funnel (i.e. body 56) and the base (i.e. receptacle 71).

(3) Independent Claim 80 states: ``*with a hydrophilic absorbent pad disposed in said pad well, with the downstream surface of said hydrophilic absorbent pad resting directly on the top surface of said absorbent pad support means, with at least a portion of the downstream surface of said filter means inside of the filter seal resting on the upstream surface of said absorbent pad,*''

From section (1) above neither embodiment of Krueger contains a pad well. Nor does either the first embodiment or the second embodiment of Krueger contain an absorbent pad.

In Response To Paragraph 15 Of The Detailed Action

New Independent Claim 80 has been written to overcome the objections of paragraphs 15 of the Detailed Action. New Independent Claim 80 contains the following features:

(1) Independent Claim 80 states: ``*a base containing a funnel well with a filter seal surface disposed adjacent to the bottom of the inside wall of said funnel well, with an absorbent pad support means disposed in the bottom of said funnel well inside of said filter seal surface, entirely below said filter seal surface, thereby creating a pad well below said filter seal surface,*''

Applicants New Independent claim 80 contains:

(a) **Applicants New Independent Claim 80 contains** a filter seal surface disposed adjacent to the bottom of the inside wall of the funnel well.

(b) **Applicants New Independent Claim 80 contains** an absorbent pad support means disposed in the bottom of the funnel well inside of the filter seal surface,

entirely below the filter surface, thereby creating a pad well below the filter seal surface.

Referring to Figures 4A, 5, and 6, of Jones Jr. et al. and to the following quotes from Jones Jr. et al., the filter seal surface of Jones Jr. et al. is surface 42, not surface 48. Referring to the dot-dashed lines of Figure 4A, the outer edge of the SPE disk align with the outer edge of surface 42, and the non-porous rim region 33 of the SPE disk is sealed between surface 46 of ring 45 and surface 42 of disk holder 40. The funnel well of Jones Jr. et al. is defined by second projection 44 and by the top surface 48. Hence the filter seal surface 42 of Jones Jr. et al. is not disposed adjacent to the bottom of the inside wall of the funnel well, but below the bottom of the inside wall of the funnel well. Furthermore, disk holder 40 does not contain a pad well. As just explained, the non-porous rim 33 of the SPE disk rests on surface 42 of disk holder 40 with the lower portion of the SPE disk protruding through the aperture 41 of disk holder 40 as shown in Figures 4A and 6.

Column 3, line 46 of Jones states, ``FIG. 4A is a schematic cross section of an improved disk holding apparatus in accordance with the invention comprising *a disk holder 40 and a ring 45. The disk holder comprises in essence, a hollow ring having an aperture 41, a recessed region 42 surrounding the aperture on the upper surface for receiving and centering an SPE disk 30 such as the encapsulated disk of FIG. 3. In addition, the holder includes a first projecting portion 43 surrounding the aperture on the lower surface for centering the input port of the base and thereby centering the holder in relation to the port. It also includes a second projecting portion 44 on the upper surface for centering the output port of the funnel. The holder thus centers the active portion of the disk in the direct flow path of the apparatus. A second hollow ring 45 communicates with the SPE disk 30 and the holder 40 in a complementary relationship. Temporary liquid sealing of the SPE disk into the apparatus occurs at the recessed area 42 of the holder in combination with the essentially non-porous rim 34 (33) of the SPE disk and the downward projecting portion 46 of the hollow ring 45.*''

Column 4, line 7 of Jones states, ``FIG. 5 is an exploded view of a first embodiment of SPE apparatus in

accordance with the invention. It differs from the conventional apparatus of FIG. 1 *in that the encapsulated SPE disk 50 of FIG. 3 is held in the direct flow path by the hollow rings 45 and 40.''*

Column 4, line 30 of Jones states, ``FIG. 6 is a schematic cross section of the apparatus of FIG. 5 in assembled form. *The disk 50 is supported by the holder recessed region 42, and the disk rim 33 is clamped between ring 45 and the holder 40.''*

In the last quote (i.e. Column 4, line 30 of Jones) the disk 50 refers to the SPE disk assembly which includes a conventional SPE disk 30 encapsulated between a pair of membrane layers 31 and 32, with the rim portion 33 of the membrane layers sealed together to form a non-porous rim 33 (see Figure 3A). When Jones Jr. et al. states that ``*the disk 50 is supported by the holder recessed region 42, and the disk rim 33 is clamped between ring 45 and the holder 40*'', he is saying that the disk assembly 50 is supported by, and sealed to, the holder recessed region 42. The conventional SPE disk 30 (equivalent to applicants absorbent pad) that is encapsulated between the two membrane layers is supported by the second membrane layer 32, not by the recessed region 42.

(2) Independent Claim 80 states: ``*a hydrophilic filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said filter seal surface,''*

(a) **Applicants New Independent Claim 80 contains** a hydrophilic filter means.

(b) **Applicants New Independent Claim 80 contains** a hydrophilic filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said filter seal surface.

Referring to Figures 3A, 4A, and 6 of Jones Jr. et al. and to the following quotes from Jones Jr. et al., Jones Jr. et al. **does not contain:**

(a) **Jones Jr. et al. does not contain** a hydrophilic filter means.

(b) **Jones Jr. et al. does not contain** a hydrophilic filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said filter seal surface.

> Column 1, line 43 of Jones states, ``In accordance with the invention, an SPE extraction apparatus is provided with a new SPE disk which eliminates radial wicking and weeping and new disk holding apparatus which minimizes the indirect flow region and minimizes the number of sample transfers required. The new SPE disk *encapsulates the sorbent/fiber matrix between two porous outer layers which can be filters, united into an essentially non-porous rim around the disk perimeter.*''
>
> Column 3, line 29 of Jones states, ``FIGS. 3A and 3B are a schematic cross section and a top view, respectively, of an improved SPE disk in accordance with the invention, *The improved disk comprises a conventional SPE disk 30 encapsulated within a pair of membrane layers 31, 32.* The disk 30 is dimensioned and sized within the direct flow path of a disk holder (not shown). The portions of layers 31, 32 overlying and underlying the disk in the direct flow path are porous and permit direct flow of sample through the disk. *The portions of layers 31, 32 extending beyond the periphery of the disk 30 are laminated together to form an essentially non-porous rim 33 around the disk perimeter. Preferably the membrane layers are thin layers of plastic such as films of polypropylene. The pores or openings are sufficiently large e.g. 20 micrometers, to permit liquid to easily pass into and out of the SPE disk.*''
>
> Column 4, line 15 of Jones states, ``The advantages of this apparatus are manyfold. *Because the edges of the disk are sealed in an essentially non-porous rim, loss of sample by wicking and weeping is negligible.*''

From the above three quotes, **Jones Jr. et al. does not contain** a hydrophilic filter means. Jones Jr. et al. contains a conventional SPE disk 30 encapsulated within a pair of membrane layers 31, 32. The membrane layers are thin layers of plastic such as films of polypropylene. Polypropylene being a hydrophobic material, not a hydrophilic material. Hydrophobic

materials such as polypropylene being used because of their chemical resistance.

In applicants new claim 80, there is a single layer of filter means with the outer periphery of the downstream surface of the filter means lying in the same plane as the filter seal surface.

In Jones Jr. et al. the downstream surface of the outer periphery of the second membrane layer 32 (not the first membrane layer 31 as shown in Figure 3A) is in contact with the filter seal surface 42 of disk holder 40 as shown in Figures 3A and 4A.

In Jones Jr. et al. to prevent wicking and weeping around the outer edge of disk 30, disk 30 must be encapsulated between membrane layers 31 and 32 with the rim portion 33 of membrane layers 31 and 32 sealed together to form a non-porous rim 33. In applicants new claim 80 only one filter means is used, not two.

(3) Independent Claim 80 states: ``a hydrophilic filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said filter seal surface,''

``with *a hydrophilic absorbent pad disposed in said pad well, with the downstream surface of said hydrophilic absorbent pad resting directly on the top surface of said absorbent pad support means,*''

``with the thickness of said hydrophilic absorbent pad being sufficiently greater than the height of said pad well, and with the thickness of the hydrophilic absorbent pad being sufficiently greater than the thickness of the hydrophilic filter means,''

``so that *the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered*''

Applicants New Independent Claim 80 contains a hydrophilic absorbent pad that swells in thickness after being wetted by the liquid being filtered.

Referring to Figures 3A, 4A, 5,6, and 8 of Jones Jr. et al. and to the following quotes from Jones Jr. et al., **Jones Jr. et al. does not *contain*** *a hydrophilic absorbent pad that swells in thickness after being wetted by the liquid being filtered.*

Column 1, line 6 of Jones states, ``*This invention relates to a solid phase extraction disk, disk holder*

and apparatus for providing enhanced recovery and precision.''

Column 1, line 13 of Jones states, ``*The basic objective of such an apparatus is to filter the solid portion of the sample (if any) and to selectively absorb compounds from the liquid portion onto a sorbent. The analyte of interest can be subsequently extracted from the solvent and eluted from the sorbent with a minimal amount of an appropriate solvent.*''

Column 1, line 19 of Jones states, ``*Typical conventional SPE disk apparatus disposes a thin sorbent-impregnated SPE disk* between the flange of an upper funnel and the flange of a lower base.''

Column 1, line 43 of Jones states, ``*In accordance with the invention, an SPE extraction apparatus is provided with a new SPE disk which eliminates radial wicking and weeping and new disk holding apparatus which minimizes the indirect flow region and minimizes the number of sample transfers required. The new SPE disk encapsulates the sorbent/fiber matrix between two porous outer layers which can be filters, united into an essentially non-porous rim around the disk perimeter.*''

Column 2, line 30 of Jones states, ``*The SPE disk 12 is commonly a mat of glass or polymer fibers impregnated with particles of chemical separation media, for example silica gel derivatized with octadecane.*''

Column 2, line 52 of Jones states, ``In operation the disk is first washed with elution solvent (and activating solvent or conditioning solvent if needed). It is then wetted with a small volume of the sample to be filtered. Capillary action draws liquid into the direct flow region of the disk (the region between the openings) and into the indirect flow space between the flanges. The vacuum is turned on to initiate suction of filtrate through the disk membrane, and more sample is added to the funnel. The addition process is continued until all of the sample to be filtered has passed through the disk or the sorbent capacity of the disk is saturated.

The analytes bound by the sorbents and trapped in solids filtered out by the disk are collected by elution. The vacuum is disconnected and a small

(minimal) amount of extraction solvent is applied. During a ``soak'' period, *analytes bound by the sorbents within the disk desorb and partition into the extraction solvent*. After soaking, vacuum is reapplied, and the solvent is collected.''

Column 3, line 29 of Jones states, ``FIGS. 3A and 3B are a schematic cross section and a top view, respectively, *of an improved SPE disk in accordance with the invention, The improved disk comprises a conventional SPE disk 30 encapsulated within a pair of membrane layers 31, 32*. The disk 30 is dimensioned and sized within the direct flow path of a disk holder (not shown). *The portions of layers 31, 32 overlying and underlying the disk in the direct flow path are porous and permit direct flow of sample through the disk. The portions of layers 31, 32 extending beyond the periphery of the disk 30 are laminated together to form an essentially non-porous rim 33 around the disk perimeter. Preferably the membrane layers are thin layers of plastic such as films of polypropylene*. The pores or openings are sufficiently large e.g. 20 micrometers, to permit liquid to easily pass into and out of the SPE disk. *The disk 30 can be glass fiber or polymer fiber, such as polyethylene, containing sorbent particles.*''

Column 4, line 7 of Jones states, ``FIG. 5 is an exploded view of a first embodiment of SPE apparatus in accordance with the invention. It differs from the conventional apparatus of FIG. 1 in that *the encapsulated SPE disk 50 of FIG. 3 is held in the direct flow path by the hollow rings 45 and 40*. Additionally, screen 13 may be held in place by a removable PTFE ring 23 which facilitates removal of the screen 13 from base 11.''

Column 4, line 15 of Jones states, ``The advantages of this apparatus are manyfold. *Because the edges of the disk are sealed in an essentially non-porous rim, loss of sample by wicking and weeping is negligible.*''

From the above nine quotes **Jones Jr. et al. does not contain** a hydrophilic absorbent pad that swells in thickness after being wetted by the liquid being filtered. Jones Jr. et al. contains an improved SPE disk comprised of a mat of glass or polymer fibers impregnated with particles of chemical separation media

(i.e. disk 30), encapsulated within a pair of membrane layers 31, 32, that are laminated together to form an essentially non-porous rim 33 around the SPE disk perimeter. The disk 30 of Jones Jr. et al. is equivalent to the absorbent pad in applicants claim 80. The disk 30 of Jones Jr. et al. (i.e. the mat of glass or polymer fibers) is non-absorbent. The particles that are impregnated into the disk 30 are used to selectively absorb compounds from the liquid being filtered. In Jones Jr. et al. the disk 30 is specifically made from a material (i.e. a mat of glass or polymer fibers) that is non-absorbing so that the impregnated particles in disk 30 can selectively absorb compounds from the liquid being filtered. Because the disk 30 is made from a non-absorbing material, the fibers of disk 30 do not wet, and therefore do not swell. In addition the membrane layers that encapsulate disk 30 are thin layers of plastic such as films of polypropylene. The thin films of plastic such as films of polypropylene are also non-absorbing and will not swell in the liquids being analyzed by the apparatus of Jones Jr. et al. The materials from which the disk 30 and the membranes 31 and 32 are made of must be selected so that they are inert to the liquid being analyzed. Otherwise, the results of the analysis would be un-reliable. The concept of using a hydrophilic absorbent pad that swells when wetted by the liquid being filtered is entirely foreign to Jones Jr. et al. Jones Jr. et al. requires a non-absorbent pad impregnated with sorbent particles to selectively absorb compounds from the liquid being filtered (i.e. two components, the non-absorbing pad and the sorbent particles). Applicants claim 80 requires one component, the hydrophilic absorbent pad.

(4) Independent Claim 80 states: ``a base containing a funnel well with a filter seal surface disposed adjacent to the bottom of the inside wall of said funnel well, *with an absorbent pad support means disposed in the bottom of said funnel well inside of said filter seal surface, entirely below said filter seal surface, thereby creating a pad well below said filter seal surface*,''

``a hydrophilic filter means disposed in the bottom portion of said funnel well with the outer periphery of the downstream surface of said filter means lying in the same plane as said filter seal surface, with the outer periphery of the filter means sealed to the filtration apparatus to prevent bypass of un-filtered liquid around the filter means,''

``*with a hydrophilic absorbent pad disposed in said pad well, with the downstream surface of said hydrophilic*

absorbent pad resting directly on the top surface of said absorbent pad support means,''

Applicants New Independent Claim 80 contains an absorbent pad support means disposed in the bottom of the funnel well inside of the filter seal surface, and below the filter surface, thereby creating a pad well below the filter seal surface, with a hydrophilic absorbent pad disposed in the pad well, with the downstream surface of the hydrophilic absorbent pad resting directly on the top surface of the absorbent pad support means.

Referring to Figures 3A, 4A, 5,6, and 8 of Jones Jr. et al. and to the following quotes from Jones Jr. et al., **Jones Jr. et al. does not contain** an absorbent pad support means disposed in the bottom of the funnel well inside of the filter seal surface, and below the filter surface, thereby creating a pad well below the filter seal surface, with a hydrophilic absorbent pad disposed in the pad well, with the downstream surface of said hydrophilic absorbent pad resting directly on the top surface of the absorbent pad support means. As explained above in section (3) of Jones Jr. et al. the improved SPE disk is comprised of a mat of glass or polymer fibers impregnated with particles of chemical separation media (i.e. disk 30), encapsulated within a pair of membrane layers 31, 32, that are laminated together to form an essentially non-porous rim 33 around the SPE disk perimeter. Also as explained above in section (1) of Jones Jr. et al. the non-porous rim region 33 of the SPE disk is sealed between surface 46 of ring 45 and surface 42 of disk holder 40. When the SPE disk is used as shown in Figure 6 of Jones Jr. et al. the mat of glass or polymer fibers (i.e. disk 30), is only supported by the lower membrane layer 32, with the downstream surface of disk 30 resting directly on a portion of the upstream surface of the lower membrane layer 32. Because the rim portion of lower membrane layer 32 is laminated to the rim portion of upper membrane layer 31, and because the bottom surface of the rim portion of lower membrane layer 32 is in contact with the filter seal surface 42 of disk holder 40, the rim portion of lower membrane layer 32 is located above the filter seal surface. Hence if the lower membrane layer 32 is considered to be a pad support means, it is not disposed entirely below the filter seal surface 42 of disk holder 40. The absorbent pad support means in applicants new claim 80 is disposed entirely below the filter seal surface. Furthermore when the lower membrane layer 32 of Jones Jr. et al. is considered to be a pad support means two membrane layers are required. In applicants claim 80 only one filter means is necessary. The additional membrane layer required by Jones Jr. et al. imposes an additional pressure drop across the filter/pad combination, thereby increasing the pressure drop across the filter/pad combination, thereby reducing the flow rate

through the filter/pad combination, thereby increasing the total filtration time.

> Column 4, line 7 of Jones Jr. et al. states, ``FIG. 5 is an exploded view of a first embodiment of SPE apparatus in accordance with the invention. It differs from the conventional apparatus of FIG. 1 in that *the encapsulated SPE disk 50 of FIG. 3 is held in the direct flow path by the hollow rings 45 and 40.* Additionally, screen 13 may be held in place by a removable PTFE ring 23 which facilitates removal of the screen 13 from base 11.''

When a disk support screen 13 is used as a SPE disk support as shown in Figures 5 and 8 of Jones Jr. et al. the downstream surface of lower membrane layer 32 below the downstream surface of disk 30 will rest on the top surface of screen 13, with the downstream surface of disk 30 resting on the upstream surface of lower membrane layer 32, not on support screen 13. Furthermore, when screen 13 is used in either the apparatus of Figure 5 or in the apparatus of Figure 8, ring 23 must also be used, thereby adding an additional component not necessary in applicants claim 80. Furthermore, even when screen 13 is used, Jones Jr. et al. still requires a second membrane layer not required in applicants claim 80.

Jones Jr. et al. uses the SPE disk to remove specific components from the liquid being filtered. In claim 80 applicant claims that the hydrophilic absorbent pad is used to keep the filter means wrinkle free after the hydrophilic absorbent pad and the hydrophilic filter means have been wetted with the liquid being filtered. As explained above Jones Jr. et al.'s SPE disk is not capable of doing this. The SPE disk of Jones Jr. et al. is in no way applicable to applicants claim 80, or to any other aspect of applicants invention.

For all of the above reasons Krueger does not teach the device described in applicants new claim 80, nor does Jones Jr. et al. teach the device described in applicants new claim 80, nor does any combination of Jones Jr. et al. with Krueger teach the device described in applicants new claim 80, nor does any combination of Jones Jr. et al. with any other reference teach the device described in applicants new claim 80.

Krueger And Jones Jr. et al. Do Not Contain Any Justification To Support Their Combination, Much Less In The Manner Proposed

With regard to the proposed combination of Krueger and Jones Jr. et al., it is well known that in order for any prior-art references themselves to be validly combined for use in a prior-art § 103 rejection, *the references themselves* (or some other prior-art) *must* suggest that they be combined. (Refer in the attached Addendum II, to *Sernaker, Orthopedic Equipment Co. v. United States, Uniroyal Inc, v. Rudkin-Wiley Corp., and Ex parte Levengood*).

In the present case, there is no reason giver in the last O.A. to support the proposed combination, other than the statement ``It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Krueger, by adding the embodiments taught by Jones, Jr. et al., in order to provide an improved vacuum filtration apparatus having an improved filter support means and an additional filtering means in the form of an absorbent pad/disk, thereby providing a more effective filtration apparatus capable not only of removing certain size contaminants/undesirable constituents from a fluid but has an additional absorbent means for absorbing unwanted constituents not removed by a filter element/membrane layer. Furthermore, the design of the filter support means of Jones, Jr. et al. provides a multitude of various funnels to be combined with various bases while at the same time provide an active area of the filter element/absorbent pad be in a direct flow path of the fluid during use, see cols. 3-4 of Jones, Jr. et al.''

As explained above, the pad support of Jones Jr. et al. functions differently than the pad support described in applicants Claim 80. In Jones Jr. et al. the pad support always requires a second membrane layer not required in applicants Claim 80, and when Jones Jr. et al. uses screen 13, the pad still rests on the second membrane not on screen 13. Additionally when screen 13 is used, ring 23 is also required, which is not required in applicants Claim 80. Therefore, adding the pad support of Jones Jr. et al. to Krueger *does not create* the pad support of applicants Claim 80. The fact that the SPE disk of Jones Jr. et al. selectively removes components from the liquid being filtered by absorption is totally irrelevant to applicants Claim 80 and to applicants invention in general. Also the fact that Jones Jr. et al. provides an active area of the filter element/absorbent pad be in a direct flow path of the fluid during use is totally irrelevant to applicants Claim 80 and to applicants invention in general.

Furthermore, Jones Jr. et al. relates to a different technology (i.e. solid phase extraction, not vacuum filtration), Jones Jr. et al. solves a different problem in a different way (i.e. Jones Jr. et al. has an improved solid phase extraction disk and apparatus, which does not relate to the invention described in applicant's Claim 80, and which is not usable in the invention described in applicant's Claim 80). Jones Jr. et al. also requires many more component parts than applicant's Claim 80. Referring to Figure 5, Jones Jr. et al. requires (1) a funnel, (2) a disk holder 40, (3) a ring 45, (4) a base 11, (5) a clamp 20, and (6) an SPE disk composed of a pad encapsulated between two membrane layers, and optionally (7) a screen 13. Applicant's Claim 80 requires (1) a base, (2) a funnel, (3) a filter means, and (4) an absorbent pad.

Applicant therefore submits that combining Jones Jr. et al. with Krueger or any of the other references is not justified and is therefore improper. Applicant submits that the rejection on these references is also improper and should be withdrawn.

Applicant respectfully requests, if Claim 80 or any other claims are again rejected upon any combination of references, that the Examiner include an explanation, in accordance with M.P.E.P. § 706.02, *Ex parte Clapp*, 27 U.S.P.Q. 972 (P.O.B.A. 1985), and *Ex parte Levengood*, supra, a "factual basis to support her conclusion that it would have been obvious" to make the combination.

The Last Office Action Did Not Specify How To Combine Jones Jr. et al. And Krueger. Those Skilled In The Art Would Find It Physically Impossible To Combine The References In The Manner Suggested

In the last Office Action it was not specified how the features of Jones Jr. et al. could be combined with Krueger. It would be physically impossible to do this.

Even If Jones Jr. et al. And Krueger, Or Jones Jr. et al. And Any Other Prior-Art Reference Were To Be Combined In The Manner Proposed, The Proposed Combination Would Not Show All Of The Novel Features Of Claim 80

As explained above neither Krueger, or Jones Jr. et al. or any combination thereof, will contain all of the novel features of applicant's Claim 80. More importantly neither Krueger, or Jones Jr. et al. or any combination thereof, or any combination including any of the other references

contain the most important features of applicant's Claim 80; that is:

> a hydrophilic absorbent pad disposed in the pad well, with the downstream surface of said hydrophilic absorbent pad resting directly on the top surface of said absorbent pad support means,
>
> with the thickness of said hydrophilic absorbent pad being sufficiently greater than the height of said pad well, and with the thickness of the hydrophilic absorbent pad being sufficiently greater than the thickness of the hydrophilic filter means,
>
> so that *the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered*

None of the prior art even addresses the problem of keeping the hydrophilic filter means wrinkle free after the hydrophilic filter means has been wetted by the liquid being filtered, let alone solves this problem.

The Novel Physical Features Of Claim 80 Produce New And Unexpected Results And Hence Are Unobvious And Patentable Over These References Under § 103

As explained above, the invention of Claim 80 produces a hydrophilic filter means that remains wrinkle free after being wetted by the fluid being filtered. Because none of the prior art addresses this problem, let alone solves it, Claim 80 produces new and unexpected results that are unobvious and patentable over these references under § 103.

Comments With Regard To Independent Claim 80 And Sklar

Sklar **does not contain** the following features of applicant's Claim 80:

> (i) **Sklar does not contain** a base with a filter seal surface disposed adjacent to the bottom of the inside wall of the funnel well;
>
> The filter support 34 of Sklar supports an annular gasket or resilient seal ring 35, which in turn supports a porous filter membrane 37 (i.e. the filter means). The filter support which is the top surface of

the annular gasket is disposed above the bottom of the inside wall of the funnel well, not adjacent to the bottom of the inside wall of the funnel well. (Refer to Column 3, Line 12-21 and to Figure 1-4).

(ii) **Sklar does not contain** an absorbent pad support means disposed in the bottom of said funnel well *inside of said filter seal surface.*

> The absorbent pad support means of Sklar is support surface 34 and the ribs disposed inside of support surface 34. The outside edge of support surface 34 is coincident with the outside edge of the filter seal surface (i.e. the outside edge of gasket 35). Therefore the inner edge of the filter seal surface lies within the outside edge of the pad support surface. The pad well of Sklar is defined by support surface 34 and by the inner wall of the funnel well (i.e. the funnel well and the pad well are one in the same).

(iii) The thickness of the absorbent pad **of Sklar is not** sufficiently greater than the height of the pad well. The thickness of the filter pad 36 of Sklar is not greater than the height of annular gasket 35, in fact referring to Figure 1, 3, and 4, the height of annular gasket 35 is greater than the thickness of pad 36 (i.e. the bottom surface of annular gasket 35 lies below the bottom surface of pad 36); and the top surface of pad 36 lies in the same plane as the top surface of annular gasket 35, both of which lie below the top of the pad well which is the same as the funnel well.

(iv) The thickness of the absorbent pad **of Sklar is not** sufficiently greater than the height of the pad well,

so that the hydrophilic absorbent pad will swell substantially more in thickness than the hydrophilic filter means will swell in thickness when both are wetted by the liquid being filtered,

thereby keeping the hydrophilic filter means wrinkle free as the filter means swells in diameter after being wetted.

> The concept of using an absorbent pad whose thickness is sufficiently thicker than the height of the pad well, and sufficiently thicker than the filter means, so that the top of the pad can swell a sufficient amount above the top of the pad well, after both the absorbent pad and the filter means have been wetted by the liquid being filtered, thereby keeping the hydrophilic filter means

wrinkle free is completely foreign to Sklar and to all of the other prior art references. Sklar does not address this problem, let alone solve it.

Neither Sklar Or Any Of The Other References Contain Any Justification To Support A Combination Of Sklar With Any Of The Other References

It is well known that in order for any prior-art references themselves to be validly combined for use in a prior-art § 103 rejection, *the references themselves* (or some other prior-art) *must* suggest that they be combined. (Refer in the attached Addendum II, to *Sernaker, Orthopedic Equipment Co. v. United States, Uniroyal Inc, v. Rudkin-Wiley Corp., and Ex parte Levengood*).

SECTION VIA

NEW DEPENDENT CLAIMS 81-94

Applicant believes that New Independent Claim 80 is proper, definite and defines a novel structure that is also unobvious. Therefore dependent claims 81-94 that incorporate all of the subject matter of New Independent Claim 80 and add additional subject matter and further limit New Independent Claim 80 should also be patentable over Krueger, Jones Jr. et al., and Sklar et al.

SECTION VII

REJECTION OF CLAIM 44 ON KRUEGER JONES, JR., SKLAR, AND SIMPSON

INDEPENDENT CLAIM 95

In the last office action dated October 7, 2003, Claim 44 was rejected based on Krueger, Jones Jr. et al., Sklar, and Simpson. This claim has been canceled. New Independent Claim 95 is substituted for canceled Claim 44. New Independent Claim 95 has been written to define patentably over these references. Applicant believes that New Independent Claim 95 is proper, definite and defines novel

structures that are also unobvious. Applicant requests reconsideration of this rejection, as now applicable to New Independent Claim 95 for the following reasons:

General Remarks Regarding New Independent Claim 95

(1) There is no justification, in Krueger, Jones Jr. et al., Sklar, or Simpson or in any other prior art separate from applicants disclosure, which suggests that these references be combined, much less combined in the manner proposed.

(2) The results achieved by the invention as stated in Claim 95 of using a segmented outer wall of the lid combined with one or more lid clamp tabs on the funnel are new, unexpected, superior, and un-suggested in any of the prior-art, or from commercially available vacuum filtration devices.

(3) Even if Krueger, Jones Jr. et al., Sklar, and Simpson were to be combined in the manner proposed, or in any other way, the proposed combination would not show all of the novel physical features of new Claim 95.

(4) One reference (i.e. Simpson) is from a different technical field than that of the invention; that is, it's ``nonanalogous art''.

(5) The prior-art reference (i.e. Simpson) is vague (i.e. does not specify that the cap can be made from a rigid material), is very old, and, therefore is weak and should be construed narrowly. Furthermore closures for collapsible tubes such as toothpaste tubes are generally made from pliable materials. In Figure 3 Simpson shows the cap with three slots. If the cap were made as shown in Figure 3 of Simpson from a rigid material such as polystyrene, with three segments, the segments 7 would crack when expanded outward.

(6) If the invention of using a segmented outer wall of the lid combined with one or more lid clamp tabs on the funnel was in fact obvious, because of its advantages as described in applicants Claim 95, those skilled in the art surely would have implemented it by now, since this type of vacuum filtration apparatus has been available for at least twenty years. That is; the fact that those skilled in the art have not implemented the invention, despite its great advantages, indicate that it is not obvious.

Applicants New Independent Claim 95 Includes The Following Features

(a) **New Independent Claim 95 contains** a base containing the following features:

(i) a funnel well;

(ii) a filter seal surface integral to the base disposed adjacent to the bottom of the inside wall of the funnel well;

(iii) a filter support means integral to the base disposed in the bottom of the funnel well inside of the filter seal surface;

(iv) an outlet port integral to the base in fluid flow communication with the filter support means;

(b) **New Independent Claim 95 contains** a filter means disposed in the bottom portion of the funnel well with the outer periphery of the downstream surface of the filter means lying in the same plane as the integral filter seal surface, with the outer periphery of the filter means sealed to the filter seal surface to prevent bypass around the filter means;

(c) **New Independent Claim 95 contains** a funnel with an open top releasably attached to the base, the funnel further containing the following features:

(i) one or more lid clamp tabs protruding from the upper outside wall of the funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs;

(ii) the funnel being releasably attached to the base;

(d) **New Independent Claim 95 contains** a lid containing the following features:

(i) an outer wall containing a substantially cylindrical inner surface, with the diameter of the substantially cylindrical inner surface of the outer wall being greater than or equal to the top outside edge of the funnel, and with the diameter of the substantially cylindrical inner surface of the outer wall being less than the maximum diameter of the sloped surface of the one or more lid clamp tabs, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top

outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value;

(ii) The outer wall of the lid being segmented by a plurality of slots, each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface, the outer wall containing a sufficient number of slots to make the outer wall sufficiently flexible when made from a rigid material, so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel, so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall of the lid will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

(e) **New Independent Claim 95 contains** a means to vent the interior of the funnel when the lid is pressed onto the top of the funnel;

Response To Claim 95 Regarding Krueger

Neither the first embodiment or the second embodiment or any combination thereof of Krueger contain the following features of new claim 95:

(i) **Kruerer does not contain** a filter seal surface integral to the base disposed adjacent to the bottom of the inside wall of the funnel well;

In the second embodiment of Krueger the filter seal surface is not shoulder 76, the filter seal surface is the rim-like portion 63a of funnel like member 63 which *is not* an integral part of the base (i.e. receptacle 71) but is a separate component. Rim-like portion 63a is disposed above the bottom of the inside wall of the funnel well. (Refer to Column 3, Line 54-62; Column 4, Line 19-29; and to Figure 4-6)

The funnel-like member of the first embodiment of Krueger does not contain a filter seal surface at all (Refer to column 3 line 54-62, column 4, line 23-25, and to Figure 4-6).

(ii) **Kruerer does not contain** a filter support means integral to the base disposed in the bottom of the funnel well inside of the filter seal surface in the second embodiment;

In the second embodiment of Krueger the filter support means is a part of funnel like member 63 which *is not* an integral part of the base (i.e. receptacle 71) but is a separate component (Refer to column 3 line 71- column 4 line 10, and to Figure 4-6).

(iii) **Kruerer does not contain** a filter means disposed in the bottom portion of the funnel well with the outer periphery of the downstream surface of the filter means lying in the same plane as the integral filter seal surface, with the outer periphery of the filter means sealed to the filter seal surface to prevent bypass around the filter means;

In Krueger the downstream surface of the filter means (i.e. disk 59) lies in the same plane as rim-like portion 63a of funnel like member 63 which *is not* an integral part of the base (i.e. receptacle 71) but is a separate component (Refer to column 3 line 54-62 and to Figure 4-6).

As explained in (1) above **Krueger does not contain** a filter seal surface in the first embodiment.

(iv) **Kruerer does not contain** a funnel containing one or more lid clamp tabs protruding from the upper outside wall of the funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs, with the funnel releasably attached to the base;

The outwardly extending lip 9 of hollow body 7 of the first embodiment of Krueger is used the attach the cap 11 to the hollow body 7 with a snap fit. Krueger states that the cap 11 must be made from a ``relatively soft plastic'', not from a rigid material (refer to column 3 line 27-33 and to Figure 1).

The outwardly extending lip 9 of hollow body 7 *does not contain* a sloped surface that tapers outward from the top of outwardly extending lip 9 to the bottom portion of outwardly extending lip 9. The top surface of the outwardly extending lip 9 lies in the same plane as the top of the funnel (i.e. hollow body 7), and does not contain a sloped surface. (Refer to Figure 1 of Krueger).

The first embodiment of Krueger will only work with one continuous outwardly extending lip 9, it will not work with a segmented outwardly extending lip (i.e. more than one). If more than one is used the lid will not be airtight.

In the second embodiment **of Krueger** the funnel (i.e. body 56) **does not contain** one or more lid clamp tabs. (Refer to Figure 4 and 6 of Krueger).

In the second embodiment of Krueger, the funnel (i.e. body 56) is permanently secured to the base (i.e. receptacle 71) by a means such as a cement, not releasably attached to the base. (Refer to Column 2, Line 31-35; Column 4, Line 19-29; Column 5, Line 10-12).

(v) **Kruerer does not contain** a lid containing an outer wall with a substantially cylindrical inner surface, with the outer wall being segmented by a plurality of slots, each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface, the slots allowing the outer wall to flex when made from a rigid material, with the diameter of the substantially cylindrical inner surface of the outer wall being greater than or equal to the top outside edge of the funnel, and with the diameter of the substantially cylindrical inner surface of the outer wall being less than the maximum diameter of the sloped surface of the one or more lid clamp tabs, for all values of the diameter of the substantially cylindrical inner surface of the outer wall within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value;

> The lid (i.e. cap 11) of the first embodiment of Krueger *does not* contain a substantially cylindrical inner surface, the inner surface contains a groove which snaps onto outward extending lip 9, and the cap must be made from a flexible material (Refer to Column 3, Line 27-33 and Figure 1). Nor does the lid of the first embodiment contain a plurality of slots (Refer to Figure 1). Furthermore, there is no suggestion in Krueger that the diameter of the inner surface of the lid can be greater than or equal to the top outside edge of the funnel, and less than the maximum diameter of the one or more lid clamp tabs. The concept of allowing the dimensions of the funnel, the one or more lid clamp tabs, and the lid, to vary over a normal manufacturing tolerance range is completely foreign to Krueger and to all of the other prior-art except for the applicants invention. Furthermore, if the dimensions of the funnel 7 and lid 11 were allowed to vary over a normal manufacturing tolerance range around their nominal values; then, when the funnel were made to its minimum dimension, and the lid made to its maximum dimension, the lid would not provide an airtight seal as required by Krueger. (Refer to Column 2, Line 39-45).

The lid (i.e. cover 57) of the second embodiment of Krueger fits onto the funnel (i.e. body 56) with an interference fit between the inner surface of the lid and the outer surface of the funnel. This arrangement has all of the drawbacks of the prior-art described in the prior-art section of applicants specification. The outer wall of the lid of Kruegers second embodiment is not slotted, and the funnel of the second embodiment of Krueger does not contain one or more lid clamp tabs (Refer to Figure 4 and 6). Furthermore, if the dimensions of the funnel 56 and lid 57 were allowed to vary over a normal manufacturing tolerance range around their nominal values; then if the funnel is made to its minimum dimension, and the lid made to its maximum dimension, the lid would fit very loosely with a gap between the inner surface of the outer wall of the lid and the outer surface of the funnel, and the lid would fall off if tipped over. On the other hand if the funnel is made to its maximum dimension, and the lid made to its minimum dimension, the lid would not fit onto the funnel at all. A proper fit would only be obtained if both the funnel and the lid are made to nominal dimensions.

There is no suggestion in Krueger or any other reference to allow the lid of the second embodiment (or the lid from any other reference) to be used with the funnel of the first embodiment. Even if this were possible, the lid of the second embodiment would only fit onto the funnel of the first embodiment with nominal dimensions, and even then would not provide an airtight seal. This combination would not work if the dimensions of the lid and funnel were allowed to vary over their normal manufacturing tolerance range about their nominal values.

(vi) **Kruerer does not contain** a lid containing a sufficient number of slots to make the outer wall sufficiently flexible (when made from a rigid material) so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel, so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside

edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward, and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

Neither lid 11 or lid 57 of Krueger contain any slots in the outer wall, let alone a sufficient number of slots to make the outer wall flexible when made from a rigid material. Nor does the outer wall of either of the lids expand outward when the lid is pressed onto the funnel and remain expanded outward for as long as the lid is attached to the funnel.

(vii) **Kruerer does not contain** a means to vent the interior of the funnel when the lid is pressed onto the top of the funnel;

Neither Krueger or any other reference with the exception of applicant, contains a means to vent the interior of the funnel with the lid attached to the funnel.

Response To Claim 95 Regarding Jones Jr. et al.

New claim 95 does not contain a pad well or an absorbent pad. Therefore Jones Jr. et al. is irrelevant to this claim.

Response To Claim 95 Regarding Sklar

Sklar **does not contain** the following features of new claim 95:

(i) **Sklar does not contain** a base with a filter seal surface integral to the base disposed adjacent to the bottom of the inside wall of the funnel well;

> The filter support 34 of Sklar supports an annular gasket or resilient seal ring 35, which in turn supports a porous filter membrane 37 (i.e. the filter means). The annular gasket is not integral to the base. The filter support which is the top surface of the annular gasket is disposed above the bottom of the inside wall of the funnel well, not adjacent to the bottom of the inside wall of the funnel well. (Refer to Column 3, Line 12-21 and to Figure 1-4).

(ii) **Sklar does not contain** a filter means disposed in the bottom portion of the funnel well with the outer periphery of the downstream surface of the filter means lying in the same plane as the integral filter seal surface, with the outer periphery of the filter means sealed to the filter seal surface to prevent bypass around the filter means;

> As just stated the filter seal surface of Sklar is the top surface of the annular gasket. The filter means of Sklar (i.e. filter membrane 37) is sealed by compressing the outer periphery of the filter means between the rim portion 11 of the funnel and the annular gasket 35. (Refer to Column 3, Line 12-21, and to Figure 1-3). Therefore the outer periphery of the downstream surface of the filter means *does not* lie in a plane integral to the base. Nor is the outer periphery of the filter means sealed to an integral surface of the base.

(iii) The funnel of Sklar **does not contain** one or more lid clamp tabs protruding from the upper outside wall of the funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs.

> Furthermore the base of Sklar **does not contain** a pair of lid clamp tabs. Each tab 38 (of a pair of tabs) which must be flexible, contains a projection 39 which interlocks with locking slots

16 of the funnel, *not the lid*. As can be clearly seen in Figure 4, when the lid 50 is attached to the base 30, the bottom of the lid does not reach projections 39. Therefore, projections 39 have nothing to do with attaching the lid to the base.

(iv) Sklar **does not contain** a lid with the outer wall being segmented by a plurality of slots, each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface, the slots allowing the outer wall to flex when made from a rigid material, with the diameter of the substantially cylindrical inner surface of the outer wall being greater than or equal to the top outside edge of the funnel, and with the diameter of the substantially cylindrical inner surface of the outer wall being less than the maximum diameter of the sloped surface of the one or more lid clamp tabs, for all values of the diameter of the substantially cylindrical inner surface of the outer wall within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value;

The lid (i.e. cap 50) of Sklar fits onto the funnel (i.e. upper body 10) with an interference fit between the inner surface of the lid and the outer surface of the funnel. This arrangement has all of the drawbacks of the prior-art described in the prior-art section of applicants specification. The outer wall of the lid of Sklar is not slotted, and the funnel of Sklar does not contain one or more lid clamp tabs (Refer to Figure 1-3). Furthermore, if the dimensions of the funnel 10 and lid 50 were allowed to vary over a their normal manufacturing tolerance range; then if the funnel is made to its minimum dimension, and the lid made to its maximum dimension, the lid would fit very loosely with a gap between the inner surface of the outer wall of the lid and the outer surface of the funnel, and the lid would fall off if tipped over. On the other hand if the funnel is made to its maximum dimension, and the lid made to its minimum dimension, the lid would not fit onto the funnel. A proper fit would only be obtained if both the funnel and the lid are made to nominal dimensions.

(v) Sklar **does not contain** a lid containing a sufficient number of slots to make the outer wall sufficiently flexible (when made from a rigid material) so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel, so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the segments of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward, and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the segments of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

> The lid 50 of Sklar does not contain any slots in the outer wall, let alone a sufficient number of slots to make the outer wall flexible when made from a rigid material. Nor does the outer wall expand outward when the lid is pressed onto the funnel and remain expanded outward for as long as the lid is attached to the funnel.
>
> The lid 50 of Sklar is preferably made from polyethylene, a relatively soft material, not a rigid material (Refer to Column 4, Line 30-34).

(vi) Sklar **does not contain** a means to vent the interior of the funnel when the lid is pressed onto the top of the funnel;

Neither Sklar or any other reference with the exception of applicants contains a means to vent the interior of the funnel with the lid attached to the funnel.

Th re Is No Justification To Support The Combination Of Sklar and Krueger, Or Sklar And Any Other Cited Prior Art, Much Less In The Manner Proposed

With regard to the proposed combination of Sklar with Krueger, it is well known that in order for any prior-art references themselves to be validly combined for use in a prior-art § 103 rejection, *the references themselves* (or some other prior-art) *must* suggest that they be combined. (Refer in the attached Addendum II, to *Sernaker, Orthopedic Equipment Co. v. United States, Uniroyal Inc, v. Rudkin-Wiley Corp., and Ex parte Levengood*).

As stated in the *Levengood* case (see Addendum I),

> ``That one can reconstruct and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless the logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention.''.

Applicant therefore submits that combining Sklar with Krueger or any of the other references is not justified and is therefore improper. Applicant submits that the rejection on these references is also improper and should be withdrawn.

Applicant respectfully requests, if Claim 95 or any other claims are again rejected upon any combination of references, that the Examiner include an explanation, in accordance with M.P.E.P. § 706.02, *Ex parte Clapp*, 27 U.S.P.Q. 972 (P.O.B.A. 1985), and *Ex parte Levengood*, supra, a ''factual basis to support her conclusion that it would have been obvious'' to make the combination.

Even If Sklar And Krueger, Or Sklar And Any Other Prior-Art Reference Were To Be Combined In The Manner Proposed, The Proposed Combination Would Not Show All Of The Novel Features Of Claim 95

However even if the combination of Sklar and Krueger, or the combination of Sklar and any of the other cited references were justified, Claim 95 would still have novel (and unobvious) physical features over the proposed combination. In other words applicant's invention, as defined by Claim 95, comprises much more than merely having a funnel releasably attached to the base. As explained above

the base of Sklar does not contain a pair of lid clamp tabs. In any event, Claim 95 does not include lid clamp tabs on the base. These differences and advantages have been described above.

The Novel Physical Features Of Claim 95 Produce New And Unexpected Results And Hence Are Unobvious And Patentable Over These References Under § 103

Claim 95 describes a lid that always fits properly onto the funnel when made from a rigid material, as long as the dimensions of the funnel and the lid have been made to within their normal manufacturing tolerance range. None of the cited prior-art addresses this problem, let alone solves the problem. As explained in applicants specification, solving this problem, as is done in Claim 95, produces a better functioning product, that works the same all of the time, at a lower cost; because lids and do not have to be matched to funnels for a proper fit, therefore the scrap rate will go to zero, or close to zero.

Response To Independent Claim 95 Regarding Simpson

The invention of Simpson relates to a closure for collapsible tubes (i.e. toothpaste tubes ect.) which is from a different technical field from the applicants claim 95 (i.e. a vacuum filtration apparatus). Simpson also solves a different problem than the problem solved by applicants claim 95, and Simpson is vague (does not specify what type of materials can be used), very old (January 28, 1935), developed at a time when modern materials and processes were not available, and, therefore the patent of Simpson is weak and should be construed narrowly. Furthermore, closures for collapsible tubes do not generally, if ever, use the invention taught by Simpson.

The invention of **Simpson requires the following features** that are not required in applicants Claim 95:

(i) The collapsible tube containing a neck that is tapered inwardly (Refer to Column 1, Line 41-42, and Figure 2 and 4).

In applicants Claim 95 the top portion of the outside wall of the funnel is substantially cylindrical in shape.

(ii) The tapered neck of the collapsible tube of **Simpson must contain** a plurality of exteriorly disposed circumferentially arranged grooves, each of which is provided with a horizontal portion 2 that merges at one

end into an upwardly inclined portion 3. The horizontal portions of the grooves are of the same depth throughout the length thereof, but the depth of the upwardly inclined portions decrease until they merge into the outer surface of the neck, as clearly shown in Figure 4, in order that the grooves will simulate a means in the form of segments of screw threads (Refer to Column 1, Line 41-54, and Figure 4).

The neck of **Simpson does not contain** one or more lid clamp tabs.

> **Applicants Independent Claim 95 does not contain or require** grooves of any sort in the outside wall of the funnel.
>
> The funnel in applicants Claim 95 contains one or more lid clamp tabs protruding from the upper substantially cylindrical portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs. Simpson *does not contain* any of these features.

(iii) The cap of **Simpson requires** a tapered skirt 5. (Refer to Column 2, Line 3-8, and to Figure 2).

> The inner surface of the outer wall of the lid in applicants Claim 95 is substantially cylindrical in shape.

(iv) The skirt 5 contains vertical slots 6 (a total of three) which provide segments 7. The slots 6 provide a **certain amount of resiliency** (Refer to Column 2, Line 3-8, and to Figure 3). The number of slots (i.e. three) shown in Figure 3 of **Simpson will not provide the required amount of resiliency** required by Simpson if the cap were to be made from a clear rigid material such as polystyrene, polycarbonate, or acrylic. Since Simpson is very old, vague, in that he does not specify what type of materials can be used, the reference should be construed narrowly, and it should be assumed that a non-rigid material must be used in the invention of Simpson.

Because the cap of Simpson is intended to be used on collapsible tubes, which are generally small in diameter, it would not be practical to use more than three segments. This can be seen in Figure 3 and 4.

The lid in applicants Claim 95 contains a *sufficient number of slots* to make the outer wall of the lid *sufficiently flexible* when made from a *rigid material* to allow the outer wall of the lid to expand outward when the lid is pressed onto the funnel, so that the inner surface of the outer wall is releasably attached to the funnel with an interference fit between the inner surface of the lid and the one or more lid clamp tabs of the funnel. The interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel.

Applicant has made many prototypes of the lid funnel combination described in applicants Claim 95. From this experience, the lid funnel combination described in applicants Claim 95 ***would not*** work if only three slots were used in the outer wall of the lid, each segment would contain too much curvature to make the segment sufficiently flexible. With three slots the segments would crack when expanded if the lid is made from a rigid clear material such as polystyrene, polycarbonate, or acrylic. Furthermore, even if the lid did not crack, the fit would be very tight if only three slots are used. Referring to Figure 4, 11, 12, and 24 of applicants specification, it is clearly shown that the outer wall of the lid of applicants invention contains more than three segments to make it sufficiently flexible.

(v) **Simpson states**: ``The segments 7 have extending inwardly from the inner surface thereof for disposal midway the ends, teats or studs 8, to be received in the grooves in a manner which will be presently described.'' (Refer to Column 2, line 12-15, and to Figure 3).

Simpson requires one stud extending inwardly from the inner surface of each segment of the outer wall of the cap.

Applicants Independent Claim 95 does not require or use studs extending inwardly from the inner

surface of each segment. The studs would interfere wit the operation of the lid described in Claim 95.

(vi) **Simpson states**: ``Due to the resiliency of the segments 7, and the tapered formation of the neck 1, it will be obvious that the cap can be disposed on the neck, by applying slight pressure to the cap, as the pressure will cause the studs 8 to ride over the neck until they fall in the grooves; therefore the cap can be applied instantly and merely by snap action. The cap can be likewise be removed very expeditiously in that slight rotation will cause the studs 8 to ride up into the inclined portions 3 which due to the cam action thereof on the studs will move the segments outwardly and thereby release the cap.'' (Refer to Column 2, Line 22-34, and to Figure 1-4).

Simpson requires a tapered neck on the collapsible tube, so that as the cap is pushed onto the neck, the studs 8 to ride over the neck until they *snap into the grooves*. As can be seen from Figure 2 of Simpson, once the cap is disposed onto the tube, the end of the studs engage the grooves of the tube, and there is a gap between the inner surface of skirt 5 and the tapered neck 1, and the skirt 5 returns to its essentially un-expanded state. Therefore, the cap is not releasably attached to the tube with an interference fit between the inner surface of the cap and the tapered neck of the tube. Figure 2 of Simpson clearly shows that the inner surface of the skirt 5 is not substantially cylindrical in shape as in applicants lid, but tapered to match the taper of neck 1. The cap is held onto the neck of the tube because the studs 8 of the cap are engaged in the horizontal portion of the grooves 2, not because the inner wall of the skirt forms an interference fit with the neck 1.

In applicants Claim 95, the inner surface of the outer wall of the lid expands outward and remains expanded outward for as long as the lid is releasably attached to the funnel. The lid being releasably attached to the funnel with an interference fit between the expanded inner surface of the lid and the one or more lid clamp tabs of the funnel.

To remove th cap Simpson requires rotation, Applicants cap can be removed by lifting the cap up without the need to rotate the lid with respect to the funnel.

(vii) **Simpson requires** a gasket to make a ``leak proof connection''. (Refer to Column 2, Line 35-40, and to Figure 2).

In applicants Claim 95, a means is provided to vent the interior of the funnel with the lid pressed onto the funnel. The lid in applicants Claim 95 is not used to prevent the contents of the funnel from spilling, but as a lid to prevent contaminants from entering the funnel during the filtration cycle.

There Is No Justification To Support The Combination Of Simpson and Krueger, Or Simpson And Any Other Cited Prior Art, Much Less In The Manner Proposed

With regard to the proposed combination of the slot of Simpson with the lid of Krueger, or of the combination of the slot of Simpson and a lid from any other reference, it is well known that in order for any prior-art references themselves to be validly combined for use in a prior-art § 103 rejection, *the references themselves* (or some other prior-art) *must* suggest that they be combined. (Refer in the attached Addendum II, to *Sernaker, Orthopedic Equipment Co. v. United States, Uniroyal Inc, v. Rudkin-Wiley Corp., and Ex parte Levengood*).

As explained above Simpson relates to a different technology (i.e. a cap for a collapsible tube) than applicant's Claim 95 and applicant's invention in general (i.e. a vacuum filtration apparatus). Simpson is very old (i.e. 1935), and vague (i.e. Simpson does not specify what types of material can be used). Simpson also solves a different problem in a different way (i.e. Simpson is a modified screw thread), and applicants lid is a push on, pull off lid that does not use a screw thread. The cap taught in Simpson is not in general use, if used at all.

It would therefore, be unobvious for one of ordinary skill in the art to search for Simpson's invention, and then to selectively pick one feature from that reference, and then combine that feature with features from another reference to try to duplicate the invention taught in applicants Claim 95. The only reason to do this is to use applicants Claim 95 as a guide to search the prior-art to selectively locate features from prior-art references and then combine these features to try to create the invention described in applicants Claim 95. This is hindsight, not obviousness.

As stated in the *Levengood* case (see Addendum II),

> ``That one can reconstruct and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless the logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention.''.

Applicant therefore submits that combining Simpson with Krueger or any of the other references is not justified and is therefore improper. Applicant submits that the rejection on these references is also improper and should be withdrawn.

Applicant respectfully requests, if Claim 95 or any other claims are again rejected upon any combination of references, that the Examiner include an explanation, in accordance with M.P.E.P. § 706.02, *Ex parte Clapp*, 27 U.S.P.Q. 972 (P.O.B.A. 1985), and *Ex parte Levengood*, supra, a ''factual basis to support her conclusion that it would have been obvious'' to make the combination.

Even If Simpson And Krueger, Or Simpson And Any Other Prior-Art Reference Were To Be Combined In The Manner Proposed, The Proposed Combination Would Not Show All Of The Novel Features Of Claim 95

However even if the combination of Simpson and Krueger, or the combination of Simpson and any of the other cited references were justified, Claim 95 would still have novel (and unobvious) physical features over the proposed combination. In other words applicant's invention, as defined by Claim 95, comprises much more than merely adding slots to the lid of Krueger. These differences and advantages have been described above.

The Novel Physical Features Of Claim 95 Produce New And Unexpected Results And Hence Are Unobvious And Patentable Over These References Under § 103

Claim 95 describes a lid that always fits properly onto the funnel when made from a rigid material, as long as the dimensions of the funnel and the lid have been made to within their normal manufacturing tolerance range. None of the cited prior-art addresses this problem, let alone solves the problem. As explained in applicants specification,

solving this problem, as is done in Claim 95, produces a better functioning product, that works the same all of the time, at a lower cost; because lids do not have to be matched to funnels for a proper fit, therefore the scrap rate will go to zero, or close to zero.

SECTION VIIA

NEW DEPENDENT CLAIMS 96-105

Applicant believes that New Independent Claim 95 is proper, definite and defines a novel structure that is also unobvious. Therefore dependent claims 96-105 that incorporate all of the subject matter of New Independent Claim 95 and add additional subject matter and further limit New Independent Claim 95 should also be patentable over Krueger, Jones Jr. et al., Sklar et al., and Simpson.

SECTION VIII

REJECTION OF CLAIM 55 ON KRUEGER AND JONES, JR. et al.

INDEPENDENT CLAIM 106

In the last office action dated October 7, 2003, Claim 55 was rejected based on Krueger, and Jones Jr. et al. This claim has been canceled. New Independent Claim 106 is substituted for canceled Claim 55. New Independent Claim 106 has been written to define patentably over these references. Applicant believes that New Independent Claim 106 is proper, definite and defines novel structures that are also unobvious. Applicant requests reconsideration of this rejection, as now applicable to New Independent Claim 106 for the following reasons:

General Remarks Regarding New Independent Claim 106

(1) There is no justification, in Krueger, or Jones Jr. et al., or in any other prior art separate from applicants disclosure, which suggests that these references be combined, much less combined in the manner proposed.

(2) Even if Krueger, and Jones Jr. et al., were to be combined in the manner proposed, or in any other way, or if Krueger and Jones Jr. et al. were combined with any other reference, the combination would not show all of the novel physical features of new Claim 106 (i.e. a filter support

means disposed inside of, and below, a first filter seal surface, thereby creating a pad well inside of, and below, the first filter surface, with the outer periphery of the filter support means containing a second filter seal surface, with a second filter means disposed on top of the filter support means, inside of the boundary of the pad well, with the downstream surface of an absorbent pad disposed on top of the second filter means, with the outer boundary of the absorbent pad being located entirely within the boundary of the pad well, with the outer periphery of the downstream surface of a first filter means lying in the same plane as the plane of the first filter seal surface, with the outer periphery of the first filter means sealed to the base to prevent bypass around the first filter means, with at least a portion of the downstream surface of the first filter means that lies within the boundary of the pad well resting on the upstream surface of the absorbent pad).

Remarks Regarding New Independent Claim 106 In Response To Paragraph 16 Of The Detailed Office Action

New Independent Claim 106 has been written to overcome the objections of paragraph 16 of the Detailed Action.

Krueger does not contain any of the following six features contained in New Independent Claim 106 in either the first or the second embodiments:

(**i**) A first filter seal surface disposed adjacent to the bottom of the inside wall of the funnel well.

The first embodiment of Krueger shown in Figure 1-3 does not contain a filter seal surface.

The filter seal surface of the second embodiment of Krueger shown in Figure 4-6 is not shoulder 76, it is rim-like portion 63a of funnel-like member 63 which is located above the bottom of the funnel well, not adjacent to the bottom of the funnel well. (Refer to Column 3, Line 54-62).

(**ii**) A filter support means disposed in the bottom of the funnel well, *inside of, and below*, the first filter seal surface, thereby creating a pad well inside of, and below the first filter seal surface.

Neither embodiment of Krueger contains a filter seal surface disposed in the bottom of

the funnel well, *inside of, and below*, the filter seal surface, nor does either embodiment of Krueger contain a pad well.

(**iii**) A filter support means containing a second filter seal surface at its outer periphery.

(**iv**) A second filter means disposed in the pad well with the entire downstream surface of the second filter means in contact with said filter support means, and with the downstream portion of the outer periphery of the second filter means in contact with the second filter seal surface.

(**v**) An absorbent pad disposed in the pad well, with the outer boundary of the absorbent pad disposed entirely within the boundary of the pad well, with the downstream surface of the absorbent pad resting on the upstream surface of the second filter means.

(**vi**) with at least a portion of the downstream surface of the first filter means that lies within the boundary of the pad well resting on the upstream surface of the absorbent pad.

Remarks Regarding New Independent Claim 106 In Response To Paragraph 17 Of The Detailed Office Action

New Independent Claim 106 has been written to overcome the objections of paragraph 17 of the Detailed Action.

Jones Jr. et al. does not contain any of the following four features contained in New Independent Claim 106:

(**i**) A first filter seal surface disposed adjacent to the bottom of the inside wall of the funnel well.

The filter seal surface of Jones Jr. et al. is surface 42, not surface 48. Referring to the dot-dashed lines of Figure 4A, the outer edge of the SPE disk align with the outer edge of surface 42, and the non-porous rim region 33 of the SPE disk is sealed between surface 46 of ring 45 and surface 42 of disk holder 40. The funnel well of Jones Jr. et al. is defined by second projection 44 and by the top surface 48. Hence the filter seal surface 42 of Jones Jr. et al. is not disposed adjacent to the bottom of the inside

wall of the funnel well, but below the bottom of the inside wall of the funnel well.

(**ii**) A filter support means containing a second filter seal surface at its outer periphery.

Although screen 13 of Jones Jr. et al. may be used as a filter support, it does not contain a filter seal surface.

(**iii**) A second filter means disposed in the pad well with the entire downstream surface of the second filter means in contact with said filter support means, and with the downstream portion of the outer periphery of the second filter means in contact with the second filter seal surface.

The rim-portion 33 of the second membrane layer 32 in Jones Jr. et al. lies on surface 42, above support screen 13. Only the center portion of second membrane layer 32 lies on support screen 13.

(**iv**) An absorbent pad.

Jones Jr. et al. contains an improved SPE disk comprised of a mat of glass or polymer fibers impregnated with particles of chemical separation media (i.e. disk 30), encapsulated within a pair of membrane layers 31, 32, that are laminated together to form an essentially non-porous rim 33 around the SPE disk perimeter. The disk 30 of Jones Jr. et al. is equivalent to the absorbent pad in applicants claim 106. The disk 30 of Jones Jr. et al. (i.e. the mat of glass or polymer fibers) is non-absorbent. The particles that are impregnated into the disk 30 are used to selectively absorb compounds from the liquid being filtered. In Jones Jr. et al. the disk 30 is specifically made from a material (i.e. a mat of glass or polymer fibers) that is non-absorbing so that the impregnated particles in disk 30 can selectively absorb compounds from the liquid being filtered. The materials from which the disk 30 and the membranes 31 and 32 are made of must be selected so that they are inert to the liquid being analyzed. Otherwise, the results of the analysis would be un-reliable. Jones Jr. et al. requires a non-absorbent pad impregnated with sorbent particles to selectively absorb compounds from the liquid being filtered

(i.e. two components, the non-absorbing pad and the sorbent particles). Applicants claim 106 requires an absorbent pad.

Furthermore, the SPE disk of Jones Jr. et al. requires that the pad 30 be encapsulated between the upper membrane layer 31 and the lower membrane layer 32, with the outer periphery of the two membrane layers sealed together to form the non-porous rim 33. This arrangement will not work in the device described in applicant's Independent Claim 106. Refer to Column 1, Line 43-50; Column 3, Line 29-45; Column 4, Line 7-13; and to Figures 3A and 4A.

Krueger And Jones Jr. et al. Do Not Contain Any Justification To Support Their Combination, Much Less In The Manner Proposed

With regard to the proposed combination of Krueger and Jones Jr. et al., it is well known that in order for any prior-art references themselves to be validly combined for use in a prior-art § 103 rejection, *the references themselves* (or some other prior-art) *must* suggest that they be combined. (Refer in the attached Addendum II, to *Sernaker, Orthopedic Equipment Co. v. United States, Uniroyal Inc, v. Rudkin-Wiley Corp., and Ex parte Levengood*).

In the present case, there is no reason giver in the last O.A. to support the proposed combination, other than the statement ``It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Krueger, by adding the embodiments taught by Jones, Jr. et al., in order to provide an improved vacuum filtration apparatus having an improved filter support means and an additional filtering means in the form of an absorbent pad/disk, thereby providing a more effective filtration apparatus capable not only of removing certain size contaminants/undesirable constituents from a fluid but has an additional absorbent means for absorbing unwanted constituents not removed by a filter element/membrane layer. Furthermore, the design of the filter support means of Jones, Jr. et al. provides a multitude of various funnels to be combined with various bases while at the same time provide an active area of the filter element/absorbent pad be in a direct flow path of the fluid during use, see cols. 3-4 of Jones, Jr. et al.''

As explained above, neither Krueger or Jones Jr. et al. contain all of the features of applicant's Claim 106. Therefore, combining features of Jones Jr. et al. to Krueger *does not create* the Vacuum Filtration Apparatus of applicants Claim 106. Furthermore, the SPE disk of Jones Jr.

et al. is not usable in the device described in applicant's Claim 106. The fact that the SPE disk of Jones Jr. et al. selectively removes components from the liquid being filtered by absorption is totally irrelevant to applicants Claim 106 and to applicants invention in general. Also the fact that Jones Jr. et al. provides an active area of the filter element/absorbent pad be in a direct flow path of the fluid during use is totally irrelevant to applicants Claim 106 and to applicants invention in general.

Furthermore, Jones Jr. et al. relates to a different technology (i.e. solid phase extraction, not vacuum filtration), Jones Jr. et al. solves a different problem in a different way (i.e. Jones Jr. et al. has an improved solid phase extraction disk and apparatus, which does not relate to the invention described in applicant's Claim 106, and which is not usable in the invention described in applicant's Claim 106). Jones Jr. et al. also requires many more component parts than the device of applicant's Claim 106. Referring to Figure 5, Jones Jr. et al. requires (1) a funnel, (2) a disk holder 40, (3) a ring 45, (4) a base 11, (5) a clamp 20, and (6) an SPE disk composed of a pad encapsulated between two membrane layers, and optionally (7) a screen 13. Applicant's Claim 80 requires (1) a base, (2) a funnel, (3) a first filter means, (4) a second filter means, and (5) an absorbent pad.

As stated in the *Levengood* case (see Addendum I),

> ``That one can reconstruct and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless the logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention.''.

Applicant therefore submits that combining Jones Jr. et al. with Krueger or any of the other references is not justified and is therefore improper. Applicant submits that the rejection on these references is also improper and should be withdrawn.

Applicant respectfully requests, if Claim 106 or any other claims are again rejected upon any combination of references, that the Examiner include an explanation, in accordance with M.P.E.P. § 706.02, *Ex parte Clapp*, 27 U.S.P.Q. 972 (P.O.B.A. 1985), and *Ex parte Levengood*, supra, a ''factual basis to support her conclusion that it would have been obvious'' to make the combination.

The Last Office Action Did Not Specify How To Combine Jones Jr. et al. And Krueger. Thos Skilled In The Art Would Find It Physically Impossible To Combine The References In The Manner Suggested

In the last Office Action it was not specified how the features of Jones Jr. et al. could be combined with Krueger. It would be physically impossible to do this.

Even If Jones Jr. et al. And Krueger, Or Jones Jr. et al. And Any Other Prior-Art Reference Were To Be Combined In The Manner Proposed, The Proposed Combination Would Not Show All Of The Novel Features Of Claim 106

As explained above neither Krueger, or Jones Jr. et al. or any combination thereof, will contain all of the novel features of applicant's Claim 106. Nor would the combination of Krueger and Jones Jr. et al., with any other reference contain all of the novel features of applicant's Claim 106.

SECTION VIIIA

NEW DEPENDENT CLAIMS 107-111

Applicant believes that New Independent Claim 106 is proper, definite and defines a novel structure that is also unobvious. Therefore dependent claims 107-111 that incorporate all of the subject matter of New Independent Claim 106 and add additional subject matter and further limit New Independent Claim 106 should also be patentable over Krueger and Jones Jr. et al.

SECTION IX

REJECTION OF CLAIM 49 ON KRUEGER

NEW INDEPENDENT CLAIM 112

In the last office action dated October 7, 2003, Claim 49 was rejected based on Krueger. This claim has been canceled. New Independent Claim 112 is substituted for canceled Claim 49. New Independent Claims 112 has been written to define patentably over this reference. Applicant believes that New Independent Claim 112 is proper, definite

and defines novel structures that are also unobvious. Applicant requests reconsideration of this rejection, as now applicable to New Independent Claim 112 for the following reasons:

Remarks Regarding New Independent Claim 112
In Response To Paragraph 6 Of The Detailed Action

New Independent Claim 112 has been written to overcome the objections of paragraph 6 of the Detailed Action.

Neither the first or the second embodiment of Krueger contain the following two features that are contained in New Independent Claim 106.

(**i**) A filter seal surface disposed adjacent to the bottom of the inside wall of the funnel well.

The first embodiment shown in Figure 1-3 does not contain a filter seal surface.

The filter seal surface of the second embodiment shown in Figure 4-6 is not shoulder 76, it is rim-like portion 63a of funnel-like member 63 which is located above the bottom of the funnel well, not adjacent to the bottom of the funnel well. (Refer to Column 3, Line 54-62).

(**ii**) A filter seal ring comprising an annular ring containing a top surface, and a bottom surface, with an inner end surface extending from the inner edge of the top surface to the inner edge of the bottom surface, and with an outer end surface extending from the outer edge of the top surface to the outer edge of the bottom surface, with the maximum diameter of the outer end surface of the filter seal ring being greater than the inside diameter of the funnel well,

with the filter seal ring press fitted into the funnel well, until the outer periphery of the filter means is compression sealed with a leak tight seal between at least a portion of the bottom surface of the filter seal ring and the filter seal surface of the base, with an interference fit formed between at least a portion of the outer end surface of the seal ring and the inside wall of the funnel well,

a funnel with an open top, and an open bottom, with the bottom portion of said funnel releasably attached to the said base, thereby creating a reservoir for un-filtered liquid above

the filter means, with the funnel being attached to the base after the filter seal ring has been pressed into the funnel well of the base.

The fact that the funnel is attached to the base after the filter seal ring has been pressed into the funnel well of the base, implies that the filter seal ring is a separate component from the funnel.

Neither Krueger or any other reference contains a filter seal ring that is a separate component from the funnel or the base, and that is press-fitted into the funnel well of the base, with an interference fit formed between at least a portion of the outer end surface of the seal ring and the inside wall of the funnel well. With the filter seal ring being made from a non-elastomeric material. This excludes gaskets and o-rings which are made from elastomeric materials.

SECTION IX-A

NEW DEPENDENT CLAIMS 113-114

Applicant believes that New Independent Claim 112 is proper, definite and defines a novel structure that is also unobvious. Therefore dependent claims 113-114 that incorporate all of the subject matter of New Independent Claim 112 and add additional subject matter and further limit New Independent Claim 112 should also be patentable over Krueger.

SECTION X

REJECTION OF CLAIM 1 ON KRUEGER

NEW INDEPENDENT CLAIM 115

In the last office action dated October 7, 2003, Claim 1 was rejected based on Krueger. This claim has been canceled. New Independent Claim 58 is substituted for canceled Claim 1 as explained above in Section IV. New

independent Claim 115 also contains a flexible filter seal. New Independent Claims 115 has been written to define patentably over this reference. Applicant believes that New Independent Claim 115 is proper, definite and defines novel structures that are also unobvious. Applicant requests reconsideration of this rejection, as now applicable to New Independent Claim 115 for the following reasons:

Remarks Regarding New Independent Claim 115
In Response To Paragraph 3 Of The Detailed Action

New Independent Claim 115 has been written to overcome the objections of paragraph 3 of the Detailed Action. **New Independent Claim 115 contains the following features:**

(a) **New Independent Claim 115 contains:** A base containing a filter seal surface.

(b) **New Independent Claim 115 contains:** A funnel containing an integral flexible filter seal, with at least a portion of said integral flexible filter seal disposed below the bottom surface of the outside wall of the funnel, said integral flexible filter seal being compressible in the vertical direction.

(c) **In New Independent Claim 115** the funnel is attached to the base so that the bottom surface of the integral flexible filter seal of the funnel is in contact with the upstream surface of the outer periphery of the filter means, and so that the integral flexible seal of the funnel is compressed in the vertical direction thereby sealing the outer periphery of the filter means with a leak-tight compression seal between the bottom surface of the compressed integral filter seal of the funnel and the filter seal surface of the base.

(d) **In New Independent Claim 115** the integral flexible filter seal of the funnel can be compressed a sufficient distance in the vertical direction to seal filter means of varying thickness', with a leak tight seal between the filter seal surface of the base and the bottom surface of the integral flexible seal of the funnel.

None of the funnels of Krueger contain an integral flexible filter seal, with at least a portion of the integral flexible filter seal disposed below the bottom surface of the outside wall of the funnel, with the integral flexible filter seal being compressible in the vertical direction.

With the integral flexible filter seal of the funnel being compressed in the vertical direction, and with the bottom surface of the integral flexible filter seal of the funnel in contact with the upstream surface of the outer periphery of the filter means, when the funnel is attached to the base.

Thereby sealing the outer periphery of the filter means with a leak-tight compression seal between the bottom surface of the compressed integral filter seal of the funnel and the filter seal surface of the base.

With the integral flexible filter seal of the funnel having a sufficient amount of compressibility in the vertical direction to seal filter means of varying thickness', with a leak tight seal between the filter seal surface of the base and the bottom surface of the integral flexible seal of the funnel.

Referring to Column 2, Line 39-45; Column 2, Line 62-66; Column 3, Line 27-33; and to Figure 1-3 of Krueger. **Krueger does not teach** that shoulder 31 is an integral flexible seal. To the contrary, Krueger states that shoulder 31 can be made from a hard plastic such as a hard acrylic resin. The bottom surface of shoulder 31 lies in the same plane as the bottom of the side wall of hollow body 7, not below the bottom of the side wall. The outwardly extending lip 13 of Krueger is provided on the bottom portion of body 7 which is utilized to retain a snap-on funnel like member. As shown in Figure 1 of Krueger the outwardly extending lip 13 of hollow body 7 fits into a groove in the side wall of the funnel like member 15, thereby locking the hollow body 7 in a fixed vertical position relative to the funnel like member 15. Therefore, the seal between the bottom surface of the shoulder 31 and the top surface of the filter medium 29 is dependent upon the position of the groove in the side wall of funnel-like member 15 and not on flexing of shoulder 31. Krueger states that the funnel-like member must be made from a relatively soft plastic, and that hollow body 7 may be made from a relatively soft plastic or from a hard plastic. The only reason Krueger gives for using a relatively soft plastic is so that the parts can be readily snapped together, not to make an integral flexible filter seal.

Referring to Column 3, Line 44-51; Column 4, Line 46-49; Column 5, Line 36-38; and to Figure 4-6 of Krueger. **Krueger does not teach** that inwardly extending

annular lip portion 56a is an integral flexible seal. To the contrary, Krueger states that inwardly extending annular lip portion 56a can be made from a hard plastic such as polycarbonate. Furthermore, Krueger never states that inwardly extending annular lip portion 56a acts as a flexible seal. Instead Krueger states that the inwardly extending annular lip portion 56a *acts to direct the flow of liquid through the opening 62.* Furthermore in his first claim, Krueger states that the inwardly extending lip is substantially non-deformable. The only reason Krueger gives for making the second embodiment from polypropylene is for chemical resistance, not to make the parts flexible.

The concept of using an flexible filter seal that is integral to the funnel, that is compressed in the vertical direction when the funnel is attached to the base, thereby sealing the filter means between the bottom surface of the integral flexible seal of the funnel and the seal surface of the base is entirely foreign to Krueger. Also the concept of using an flexible filter seal that is integral to the funnel, that has sufficient compressibility in the vertical direction to seal the filter means between the bottom surface of the integral flexible seal of the funnel and the seal surface of the base for varying thickness' of the filter means, is also entirely foreign to Krueger.

SECTION XA

NEW DEPENDENT CLAIMS 116-117

Applicant believes that New Independent Claim 115 is proper, definite and defines a novel structure that is also unobvious. Therefore dependent claims 116-117 that incorporate all of the subject matter of New Independent Claim 115 and add additional subject matter and further limit New Independent Claim 115 should also be patentable over Krueger.

SECTION XI

REJECTION OF CLAIM 44 ON KRUEGER JONES, JR., SKLAR, AND SIMPSON

INDEPENDENT CLAIM 119

In the last office action dated October 7, 2003, Claim 44 was rejected based on Krueger, Jones Jr. et al., Sklar, and Simpson. This claim has been canceled. New Independent Claim 95 is substituted for canceled Claim 44 as explained above in Section VII. New Independent Claim 119 also contains a funnel with one or more lid clamp tabs, and a lid with slots in the side wall of the lid. New Independent Claim 119 has been written to define patentably over these references. Applicant believes that New Independent Claim 119 is proper, definite and defines novel structures that are also unobvious. Applicant requests reconsideration of this rejection, as now applicable to New Independent Claim 119 for the following reasons:

General Remarks Regarding New Independent Claim 119

(1) There is no justification, in Krueger, Jones Jr. et al., Sklar, or Simpson or in any other prior art separate from applicants disclosure, which suggests that these references be combined, much less combined in the manner proposed.

(2) The results achieved by the invention as stated in Claim 119 of using a segmented outer wall of the lid combined with one or more lid clamp tabs on the funnel are new, unexpected, superior, and un-suggested in any of the prior-art, or from commercially available vacuum filtration devices.

(3) Even if Krueger, Jones Jr. et al., Sklar, and Simpson were to be combined in the manner proposed, or in any other way, the proposed combination would not show all of the novel physical features of new Claim 118.

(4) One reference (i.e. Simpson) is from a different technical field than that of the invention; that is, it's ``nonanalogous art''.

(5) The prior-art reference (i.e. Simpson) is vague (i.e. does not specify that the cap can be made from a rigid material), is very old, and, therefore is weak and should be construed narrowly. Furthermore closures for collapsible tubes such as toothpaste tubes are generally made from pliable materials. In Figure 3 Simpson shows the cap with three slots. If the cap were made as shown in Figure 3 of Simpson from a rigid material such as polystyrene, with three segments, the segments 7 would crack when expanded outward.

(6) If the invention of using a segmented outer wall of the lid combined with one or more lid clamp tabs on the funnel was in fact obvious, because of its advantages as described in applicants Claim 119, those skilled in the art surely would have implemented it by now, since this type of vacuum filtration apparatus has been available for at least twenty years. That is; the fact that those skilled in the art have not implemented the invention, despite its great advantages, indicate that it is not obvious.

New Independent Claim 119 has been written to overcome the objections of paragraphs 46-53 of the Detailed Action.

New Independent Claim 119 contains the following features:

(a) **New Independent Claim 119 contains:** A funnel containing one or more lid clamp tabs protruding from the upper portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs.

(b) **New Independent Claim 119 contains:** A lid, having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values

of the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface of the outer wall, with the slots dividing the outer wall into a plurality of segments, with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material,

so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel, so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall of the lid will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the portions of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the portions of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

Neither Krueger, Jones Jr. et al., or Sklar et al., contain: A funnel containing one or more lid clamp tabs protruding from the upper portion of the outside wall of the funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one

or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs.

The outwardly extending lip 9 of hollow body 7 of the first embodiment of Krueger is used the attach the cap 11 to the hollow body 7 with a snap fit. Krueger states that the cap 11 must be made from a ``relatively soft plastic'', not from a rigid material (refer to column 3 line 27-33 and to Figure 1).

The outwardly extending lip 9 of hollow body 7 *does not contain* a sloped surface that tapers outward from the top of outwardly extending lip 9 to the bottom portion of outwardly extending lip 9. The top surface of the outwardly extending lip 9 lies in the same plane as the top of the funnel (i.e. hollow body 7), and does not contain a sloped surface. (Refer to Figure 1 of Krueger).

The first embodiment of Krueger will only work with one continuous outwardly extending lip 9, it will not work with a segmented outwardly extending lip (i.e. more than one). If more than one is used the lid will not be airtight.

In the second embodiment **of Krueger** the funnel (i.e. body 56) **does not contain** one or more lid clamp tabs. (Refer to Figure 4 and 6 of Krueger).

Neither Krueger, Jones Jr. et al., or Sklar et al., contain: A lid, having an outer wall with a substantially cylindrical inner surface with the height of the substantially cylindrical inner surface being greater than the distance between the bottom edge of the sloped surface of the one or more lid clamp tabs of the funnel and the top wall of the funnel,

with the diameter of the substantially cylindrical inner surface of the outer wall of the lid being greater than or equal to the diameter of the top outside edge of the funnel, and with the diameter of said substantially cylindrical inner surface of the outer wall of the lid being sufficiently less than the maximum outside diameter of the sloped surface of the one or more lid clamp tabs of the funnel when the outer wall of the lid is in its un-flexed state, for all values of the diameter of the substantially cylindrical inner surface of the outer wall of the lid within a normal manufacturing tolerance range around its nominal value, and for all values of the diameter of the top outside edge of the funnel within a normal manufacturing tolerance range around its nominal value, and for all values of the maximum outside diameter of

the sloped surface of the one or more lid clamp tabs of the funnel within a normal manufacturing tolerance range around its nominal value,

with the lid further containing a plurality of slots in the outer wall, with each slot creating a gap in the bottom surface of the outer wall, with the height of the slots being less than or equal to the height of the substantially cylindrical inner surface of the outer wall, with the slots dividing the outer wall into a plurality of segments, with the number of slots being sufficient to allow the outer wall to flex a sufficient amount when the lid is made from a rigid material,

so that the flexing of the outer wall of the lid allows the lid to be easily pressed onto the top of the funnel without the need to rotate the lid with respect to the funnel, so that as the bottom inside edge of the substantially cylindrical inner surface of the outer wall of the lid is pushed down onto the sloped surface of the one or more lid clamp tabs, the bottom inside edge of the outer wall of the lid will slide over the sloped surface of the one or more lid clamp tabs until the lid is fully seated onto the funnel with the bottom inside edge of the lid disposed below the bottom of the sloped surface of the one or more lid clamp tabs, thereby causing the portions of the substantially cylindrical inner surface of the outer wall of the lid that contact the one or more lid clamp tabs of the funnel to expand outward and to remain expanded outward for as long as the lid is pressed onto the funnel, thereby releasably attaching the lid to the funnel with an interference fit between the bottom portion of the one or more lid clamp tabs of the funnel and the portions of the inner surface of the outer wall of the lid that contact the bottom portion of the one or more lid clamp tabs, with the interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel, thereby causing the outer wall of the lid to return to its un-expanded state.

Response To Independent Claim 119 Regarding Simpson

The invention of Simpson relates to a closure for collapsible tubes (i.e. toothpaste tubes ect.) which is from a different technical field from the applicants claim 119 (i.e. a vacuum filtration apparatus). Simpson also solves a different problem than the problem solved by applicants claim 119, and Simpson is vague (does not specify what type of materials can be used), very old (January 28, 1935),

developed at a time when modern materials and processes were not available, and, therefore the patent of Simpson is weak and should be construed narrowly. Furthermore, closures for collapsible tubes do not generally, if ever, use the invention taught by Simpson.

The invention of Simpson requires the following six features that are not required in applicants Claim 119:

(i) The collapsible tube containing a neck that is tapered inwardly (Refer to Column 1, Line 41-42, and Figure 2 and 4).

(ii) The tapered neck of the collapsible tube of **Simpson must contain** a plurality of exteriorly disposed circumferentially arranged grooves, each of which is provided with a horizontal portion 2 that merges at one end into an upwardly inclined portion 3. The horizontal portions of the grooves are of the same depth throughout the length thereof, but the depth of the upwardly inclined portions decrease until they merge into the outer surface of the neck, as clearly shown in Figure 4, in order that the grooves will simulate a means in the form of segments of screw threads (Refer to Column 1, Line 41-54, and Figure 4).

The neck of Simpson does not contain one or more lid clamp tabs.

Applicants Independent Claim 119 does not contain or require grooves of any sort in the outside wall of the funnel.

The funnel in applicants Claim 119 contains one or more lid clamp tabs protruding from the upper portion of the outside wall of said funnel, with the one or more lid clamp tabs containing a sloped surface that tapers outward from the top of the one or more lid clamp tabs to the bottom portion of the one or more lid clamp tabs, so that the minimum diameter of the sloped surface of the one or more lid clamp tabs occurs at the top of the sloped surface of the one or more lid clamp tabs, and so that the maximum diameter of the sloped surface of the one or more lid clamp tabs occurs at the bottom of the sloped surface of the one or more lid clamp tabs. **Simpson does not contain any of these features.**

(iii) **The cap of Simpson requires a tapered skirt 5.** (Refer to Column 2, Line 3-8, and to Figure 2).

The inner surface of the outer wall of the lid in applicants Claim 119 is substantially cylindrical in shape.

(**iv**) The skirt 5 contains vertical slots 6 (a total of three) which provide segments 7. The slots 6 provide a **certain amount of resiliency** (Refer to Column 2, Line 3-8, and to Figure 3). The number of slots (i.e. three) shown in Figure 3 of **Simpson will not provide the required amount of resiliency** required by Simpson if the cap were to be made from a clear rigid material such as polystyrene, polycarbonate, or acrylic. Since Simpson is very old, vague, in that he does not specify what type of materials can be used, the reference should be construed narrowly, and it should be assumed that a non-rigid material must be used in the invention of Simpson.

Because the cap of Simpson is intended to be used on collapsible tubes, which are generally small in diameter, it would not be practical to use more than three segments. This can be seen in Figure 3 and 4.

The lid in applicants Claim 119 contains a *sufficient number of slots* to make the outer wall of the lid *sufficiently flexible* when made from a *rigid material* to allow the outer wall of the lid to expand outward when the lid is pressed onto the funnel, so that the inner surface of the outer wall is releasably attached to the funnel with an interference fit between the inner surface of the lid and the one or more lid clamp tabs of the funnel. The interference fit being sufficient to prevent the lid from accidentally disengaging from the funnel, while also allowing the lid to be easily removed from the funnel with one hand by lifting the lid from the funnel without the need to rotate the lid with respect to the funnel.

Applicant has made many prototypes of the lid funnel combination described in applicants Claim 119. From this experience, the lid funnel combination described in applicants Claim 119 ***would not*** work if only three slots were used in the outer wall of the lid. With three slots the segments would crack when expanded if the lid is made from a rigid clear material such as polystyrene, polycarbonate, or acrylic. Furthermore, even if the lid did not crack, the fit would be very tight if only three slots are used. Referring to Figure 4, 11, 12, and 24 of applicants specification, it is clearly shown that the outer wall of the lid of applicants invention

contains more than three segments to make it sufficiently flexible.

(**v**) **Simpson states**: ``The segments 7 have extending inwardly from the inner surface thereof for disposal midway the ends, teats or studs 8, to be received in the grooves in a manner which will be presently described.'' (Refer to Column 2, line 12-15, and to Figure 3).

Simpson requires one stud extending inwardly from the inner surface of each segment of the outer wall of the cap.

Applicants Independent Claim 119 does not require or use studs extending inwardly from the inner surface of each segment. The studs would interfere wit the operation of the lid described in Claim 119.

(**vi**) **Simpson states**: ``Due to the resiliency of the segments 7, and the tapered formation of the neck 1, it will be obvious that the cap can be disposed on the neck, by applying slight pressure to the cap, as the pressure will cause the studs 8 to ride over the neck until they fall in the grooves; therefore the cap can be applied instantly and merely by snap action. The cap can be likewise be removed very expeditiously in that slight rotation will cause the studs 8 to ride up into the inclined portions 3 which due to the cam action thereof on the studs will move the segments outwardly and thereby release the cap.'' (Refer to Column 2, Line 22-34, and to Figure 1-4).

Simpson requires a tapered neck on the collapsible tube, so that as the cap is pushed onto the neck, the studs 8 to ride over the neck until they *snap into the grooves*. As can be seen from Figure 2 of Simpson, once the cap is disposed onto the tube, the end of the studs engage the grooves of the tube, and there is a gap between the inner surface of skirt 5 and the tapered neck 1, and the skirt 5 returns to its essentially un-expanded state. Therefore, the cap is not releasably attached to the tube with an interference fit between the inner surface of the cap and the tapered neck of the tube. Figure 2 of Simpson clearly shows that the inner surface of the skirt 5 is not substantially cylindrical in shape as in the lid of applicants Claim 119, but tapered to match the taper of neck 1. The cap is held onto the neck of the tube because the studs 8 of the cap are

engaged in the horizontal portion of the grooves 2, not because the inner wall of the skirt forms an interference fit with the neck 1.

In applicants Claim 119, the inner surface of the outer wall of the lid expands outward and remains expanded outward for as long as the lid is releasably attached to the funnel. The lid being releasably attached to the funnel with an interference fit between the expanded inner surface of the lid and the one or more lid clamp tabs of the funnel.

To remove the cap Simpson requires rotation, The lid described in applicants Claim 119 can be removed by lifting the cap up without the need to rotate the lid with respect to the funnel.

There Is No Justification To Support The Combination Of Simpson and Krueger, Or Simpson And Any Other Cited Prior Art, Much Less In The Manner Proposed

With regard to the proposed combination of the slots of Simpson with the lid of Krueger, or of the combination of the slots of Simpson and a lid from any other reference, it is well known that in order for any prior-art references themselves to be validly combined for use in a prior-art § 103 rejection, *the references themselves* (or some other prior-art) *must* suggest that they be combined. (Refer in the attached Addendum II, to *Sernaker, Orthopedic Equipment Co. v. United States, Uniroyal Inc, v. Rudkin-Wiley Corp., and Ex parte Levengood*).

As explained above Simpson relates to a different technology (i.e. a cap for a collapsible tube) than applicant's Claim 119 and applicant's invention in general (i.e. a vacuum filtration apparatus). Simpson is very old (i.e. 1935), and vague (i.e. Simpson does not specify what types of material can be used). Simpson also solves a different problem in a different way (i.e. Simpson is a modified screw thread), the lid of applicants Claim 119 is a push on, pull off lid that does not use a screw thread. The cap taught in Simpson is not in general use, if used at all.

It would therefore, be unobvious for one of ordinary skill in the art to search for Simpson's invention, and then to selectively pick one feature from that reference, and then combine that feature with features from another reference to try to duplicate the invention taught in applicants Claim 119. The only

reason to do this is to use applicants Claim 119 as a guide to search the prior-art to selectively locate features from prior-art references and then combine these features to try to create the invention described in applicants Claim 119. This is hindsight, not obviousness.

As stated in the *Levengood* case (see Addendum II),

``That one can reconstruct and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless the logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention.''.

Applicant therefore submits that combining Simpson with Krueger or any of the other references is not justified and is therefore improper. Applicant submits that the rejection on these references is also improper and should be withdrawn.

Applicant respectfully requests, if Claim 119 or any other claims are again rejected upon any combination of references, that the Examiner include an explanation, in accordance with M.P.E.P. § 706.02, *Ex parte Clapp*, 27 U.S.P.Q. 972 (P.O.B.A. 1985), and *Ex parte Levengood*, supra, a ''factual basis to support her conclusion that it would have been obvious'' to make the combination.

Even If Simpson And Krueger, Or Simpson And Any Other Prior-Art Reference Were To Be Combined In The Manner Proposed, The Proposed Combination Would Not Show All Of The Novel Features Of Claim 119

However even if the combination of Simpson and Krueger, or the combination of Simpson and any of the other cited references were justified, Claim 119 would still have novel (and unobvious) physical features over the proposed combination. In other words applicant's invention, as defined by Claim 119, comprises much more than merely adding slots to the lid of Krueger. These differences and advantages have been described above.

The Novel Physical Features Of Claim 119 Produce New And Unexpected Results And Hence Are Unobvious And Patentable Over These References Under § 103

Claim 119 describes a lid that always fits properly onto the funnel when made from a rigid material, as long as the dimensions of the funnel and the lid have been made to within their normal manufacturing tolerance range. None of the cited prior-art addresses this problem, let alone solves the problem. As explained in applicants specification, solving this problem, as is done in Claim 119, produces a better functioning product, that works the same all of the time, at a lower cost; because lids and do not have to be matched to funnels for a proper fit, therefore the scrap rate will go to zero, or close to zero.

SECTION XII

REJECTION OF CLAIM 36 ON KRUEGER AND JONES, JR.

INDEPENDENT CLAIM 120

In the last office action dated October 7, 2003, Claim 36 was rejected based on Krueger and Jones Jr. et al. This claim has been canceled. New Independent Claim 80 is substituted for canceled Claim 36 as explained above in Section VI. New Independent Claim 120 contains a hydrophilic absorbent pad that swells sufficiently when wet to keep the filter means wrinkle free. New Independent Claim 120 has been written to define patentably over these references. Applicant believes that New Independent Claim 120 is proper, definite and defines novel structures that are also unobvious. Applicant requests reconsideration of this rejection, as now applicable to New Independent Claim 120 for the following reasons:

General Remarks Regarding New Independent Claim 120

(1) There is no justification , in Krueger and Jones Jr. et al., or in any other prior art separate from applicants disclosure, which suggests that these references be combined, much less combined in the manner proposed.

(2) The proposed combination would not be physically possible or operative.

(3) Even if Krueger and Jones Jr. et al. were to be combined in the manner proposed, the proposed combination would not show all of the novel physical features of new claim 120.

(4) These novel physical features of new claim 120 produce new and unexpected results and hence are unobvious and patentable over these references.

New Independent Claim 120 has been written to overcome the objections of paragraphs 14-15 of the Detailed Action.

New Independent Claim 120 contains the following features:

(a) **New Independent Claim 120 contains:** A base containing a pad well, the pad well containing a substantially vertical side wall and a bottom wall, with the boundary of the top of the side wall of the pad well being coincident with the inner boundary of the filter seal surface, with the bottom surface of the pad well being substantially parallel to the filter seal surface, and disposed entirely below the filter seal surface, with a hydrophilic absorbent pad disposed in the pad well, with the downstream surface of said absorbent pad resting directly on the bottom surface of the pad well.

(b) **New Independent Claim 120 contains:** A hydrophilic filter means, with the downstream surface of the outer periphery of the hydrophilic filter means in direct contact with the filter seal surface of the base, with the outer periphery of the hydrophilic filter means sealed to the vacuum filtration apparatus to prevent the flow of un-filtered liquid between the filter seal surface of the base and the downstream surface of the outer periphery of the hydrophilic filter means, and with at least a portion of the downstream surface of the hydrophilic filter means disposed inside of the filter seal surface of the base resting on the top surface of the hydrophilic absorbent pad.

(c) **In New Independent Claim 120:** The thickness of the hydrophilic absorbent pad is sufficiently greater than the height of the pad well, and the thickness of the hydrophilic absorbent pad is sufficiently greater than the thickness of the hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered.

Neither embodiment of Krueger contains: A base containing a pad well with a hydrophilic absorbent pad disposed in the pad well, with the downstream surface

of said absorbent pad resting directly on the bottom surface of the pad well.

Sklar does not contain: A base containing a pad well with a hydrophilic absorbent pad disposed in the pad well, with the downstream surface of said absorbent pad resting directly on the bottom surface of the pad well.

With a hydrophilic filter means, with the downstream surface of the outer periphery of the hydrophilic filter means in direct contact with the filter seal surface of the base, with the outer periphery of the hydrophilic filter means sealed to the vacuum filtration apparatus to prevent the flow of un-filtered liquid between the filter seal surface of the base and the downstream surface of the outer periphery of the hydrophilic filter means, and with at least a portion of the downstream surface of the hydrophilic filter means disposed inside of the filter seal surface of the base resting on the top surface of the hydrophilic absorbent pad.

With the thickness of the hydrophilic absorbent pad being sufficiently greater than the height of the pad well, and the thickness of the hydrophilic absorbent pad being sufficiently greater than the thickness of the hydrophilic filter means,

so that the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered.

Jones Jr. et al. does not contain: A base containing a pad well, the pad well containing a substantially vertical side wall and a bottom wall, with the boundary of the top of the side wall of the pad well being coincident with the inner boundary of the filter seal surface, with the bottom surface of the pad well being substantially parallel to the filter seal surface, and disposed entirely below the filter seal surface, with a hydrophilic absorbent pad disposed in the pad well, with the downstream surface of the absorbent pad resting directly on the bottom surface of the pad well.

> Referring to Figure 3A, 4A, 5, and 8, when Jones Jr. et al. contains a pad well the side wall would be the 60° side wall shown in Figure 4A, and the bottom wall would be the top surface of screen 13. The side wall is not substantially vertical, and the downstream surface of the pad 30 rests on the upstream surface of the second membrane layer 32, not directly on the top surface of screen 13.

Referring to Column 1, Line 13-18; Column 1, Line 6-8; Column 1, Line 19-21; Column 1, Line 43-50; Column 2, Line 30-33; Column 2, Line 52 to Column 3, Line 4; Column 3, Line 29-45; Column 4, Line 7-13; and to Column 4, Line 15-17; **Jones Jr. et al. does not contain a hydrophilic absorbent** pad that swells in thickness after being wetted by the liquid being filtered. Jones Jr. et al. contains an improved SPE disk comprised of a mat of glass or polymer fibers impregnated with particles of chemical separation media (i.e. disk 30), encapsulated within a pair of membrane layers 31, 32, that are laminated together to form an essentially non-porous rim 33 around the SPE disk perimeter. The disk 30 of Jones Jr. et al. is equivalent to the absorbent pad in applicants claim 120. The disk 30 of Jones Jr. et al. (i.e. the mat of glass or polymer fibers) is non-absorbent. The particles that are impregnated into the disk 30 are used to selectively absorb compounds from the liquid being filtered. In Jones Jr. et al. the disk 30 is specifically made from a material (i.e. a mat of glass or polymer fibers) that is non-absorbing so that the impregnated particles in disk 30 can selectively absorb compounds from the liquid being filtered. Because the disk 30 is made from a non-absorbing material, the fibers of disk 30 do not wet, and therefore do not swell. In addition the membrane layers that encapsulate disk 30 are thin layers of plastic such as films of polypropylene. The thin films of plastic such as films of polypropylene are also non-absorbing and will not swell in the liquids being analyzed by the apparatus of Jones Jr. et al. The materials from which the disk 30 and the membranes 31 and 32 are made of must be selected so that they are inert to the liquid being analyzed. Otherwise, the results of the analysis would be un-reliable. The concept of using a hydrophilic absorbent pad that swells when wetted by the liquid being filtered is entirely foreign to Jones Jr. et al. Jones Jr. et al. requires a non-absorbent pad impregnated with sorbent particles to selectively absorb compounds from the liquid being filtered (i.e. two components, the non-absorbing pad and the sorbent particles). Applicants claim 119 requires one component, the hydrophilic absorbent pad.

Jones Jr. et al. does not contain: A hydrophilic filter means, with the downstream surface of the outer periphery of the hydrophilic filter means in direct contact with the filter seal surface of the base, with

the outer periphery of the hydrophilic filter means sealed to the vacuum filtration apparatus to prevent the flow of un-filtered liquid between the filter seal surface of the base and the downstream surface of the outer periphery of the hydrophilic filter means, and with a portion of the downstream surface of the hydrophilic filter means disposed inside of the filter seal surface of the base resting on the top surface of the hydrophilic absorbent pad.

The membrane layers 31 and 32 of Jones Jr. et al. are thin layers of hydrophobic material such as polypropylene chosen for their chemical resistance and non-absorption characteristics.

In applicants new claim 120, there is a single layer of filter means with the outer periphery of the downstream surface of the filter means lying in the same plane as the filter seal surface.

In Jones Jr. et al. the downstream surface of the outer periphery of the second membrane layer 32 (not the first membrane layer 31 as shown in Figure 3A) is in contact with the filter seal surface 42 of disk holder 40 as shown in Figures 3A and 4A.

In Jones Jr. et al. to prevent wicking and weeping around the outer edge of disk 30, disk **30 must be encapsulated** between membrane layers 31 and 32 with the rim portion 33 of membrane layers 31 and 32 sealed together to form a non-porous rim 33. In applicants new claim 120 only one filter means is used, not two.

Krueger And Jones Jr. et al. Do Not Contain Any Justification To Support Their Combination, Much Less In The Manner Proposed

With regard to the proposed combination of Krueger and Jones Jr. et al., it is well known that in order for any prior-art references themselves to be validly combined for use in a prior-art § 103 rejection, *the references themselves* (or some other prior-art) *must* suggest that they be combined. (Refer in the attached Addendum II, to *Sernaker, Orthopedic Equipment Co. v. United States, Uniroyal Inc, v. Rudkin-Wiley Corp., and Ex parte Levengood*).

In the present case, there is no reason giver in the last O.A. to support the proposed combination, other than the statement ``It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Krueger, by adding the embodiments taught by

Jones, Jr. et al., in order to provide an improved vacuum filtration apparatus having an improved filter support means and an additional filtering means in the form of an absorbent pad/disk, thereby providing a more effective filtration apparatus capable not only of removing certain size contaminants/undesirable constituents from a fluid but has an additional absorbent means for absorbing unwanted constituents not removed by a filter element/membrane layer. Furthermore, the design of the filter support means of Jones, Jr. et al. provides a multitude of various funnels to be combined with various bases while at the same time provide an active area of the filter element/absorbent pad be in a direct flow path of the fluid during use, see cols. 3-4 of Jones, Jr. et al.''

As explained above, the pad support of Jones Jr. et al. functions differently than the pad support described in applicants Claim 120. In Jones Jr. et al. the pad support always requires a second membrane layer not required in applicants Claim 120, and when Jones Jr. et al. uses screen 13, the pad still rests on the second membrane not on screen 13. Additionally when screen 13 is used, ring 23 is also required, which is not required in applicants Claim 119. Therefore, adding the pad support of Jones Jr. et al. to Krueger *does not create* the pad support of applicants Claim 120. The fact that the SPE disk of Jones Jr. et al. selectively removes components from the liquid being filtered by absorption is totally irrelevant to applicants Claim 120 and to applicants invention in general. Also the fact that Jones Jr. et al. provides an active area of the filter element/absorbent pad be in a direct flow path of the fluid during use is totally irrelevant to applicants Claim 120 and to applicants invention in general.

Furthermore, Jones Jr. et al. relates to a different technology (i.e. solid phase extraction, not vacuum filtration), Jones Jr. et al. solves a different problem in a different way (i.e. Jones Jr. et al. has an improved solid phase extraction disk and apparatus, which does not relate to the invention described in applicant's Claim 120, and which is not usable in the invention described in applicant's Claim 120). Jones Jr. et al. also requires many more component parts than applicant's Claim 120. Referring to Figure 5, Jones Jr. et al. requires (1) a funnel, (2) a disk holder 40, (3) a ring 45, (4) a base 11, (5) a clamp 20, and (6) an SPE disk composed of a pad encapsulated between two membrane layers, and optionally (7) a screen 13. Applicant's Claim 119 requires (1) a base, (2) a funnel, (3) a filter means, and (4) an absorbent pad.

Applicant therefore submits that combining Jones Jr. et al. with Krueger or any of the other references is not justified and is therefore improper. Applicant submits that

the rejection on these references is also improper and should be withdrawn.

Applicant respectfully requests, if Claim 120 or any other claims are again rejected upon any combination of references, that the Examiner include an explanation, in accordance with M.P.E.P. § 706.02, *Ex parte Clapp*, 27 U.S.P.Q. 972 (P.O.B.A. 1985), and *Ex parte Levengood*, supra, a ''factual basis to support her conclusion that it would have been obvious'' to make the combination.

The Last Office Action Did Not Specify How To Combine Jones Jr. et al. And Krueger. Those Skilled In The Art Would Find It Physically Impossible To Combine The References In The Manner Suggested

In the last Office Action it was not specified how the features of Jones Jr. et al. could be combined with Krueger. It would be physically impossible to do this.

Even If Jones Jr. et al. And Krueger, Or Jones Jr. et al. And Any Other Prior-Art Reference Were To Be Combined In The Manner Proposed, The Proposed Combination Would Not Show All Of The Novel Features Of Claim 120

As explained above neither Krueger, or Jones Jr. et al. or any combination thereof, will contain all of the novel features of applicant's Claim 120. More importantly neither Krueger, or Jones Jr. et al. or any combination thereof, or any combination including any of the other references contain the most important features of applicant's Claim 120; that is:

> a hydrophilic absorbent pad disposed in the pad well, with the downstream surface of said hydrophilic absorbent pad resting directly on the top surface of said absorbent pad support means,
>
> with the thickness of said hydrophilic absorbent pad being sufficiently greater than the height of said pad well, and with the thickness of the hydrophilic absorbent pad being sufficiently greater than the thickness of the hydrophilic filter means,
>
> so that *the top of the hydrophilic absorbent pad will swell a sufficient distance above the top of the pad well to keep the hydrophilic filter means wrinkle free after both the hydrophilic filter means and the hydrophilic absorbent pad have been wetted by the liquid being filtered*

None of the prior art even addresses the problem of keeping the hydrophilic filter means wrinkle free after the hydrophilic filter means has been wetted by the liquid being filtered, let alone solves this problem.

The Novel Physical Features Of Claim 120 Produce New And Unexpected Results And Hence Are Unobvious And Patentable Over These References Under § 103

As explained above, the invention of Claim 120 produces a hydrophilic filter means that remains wrinkle free after being wetted by the fluid being filtered. Because none of the prior art addresses this problem, let alone solves it, Claim 120 produces new and unexpected results that are unobvious and patentable over these references under § 103.

SECTION XII-A

NEW DEPENDENT CLAIM 121

Applicant believes that New Independent Claim 120 is proper, definite and defines a novel structure that is also unobvious. Therefore dependent claim 121 that incorporates all of the subject matter of New Independent Claim 120 and adds additional subject matter and further limits New Independent Claim 120 should also be patentable over Krueger, and Jones Jr. et al.